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NCS 30TH
ANNIVERSARY



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THE MANAGER

EMERGENCY
COMMUNICATIONS
FOR A CHANGING
WORLD

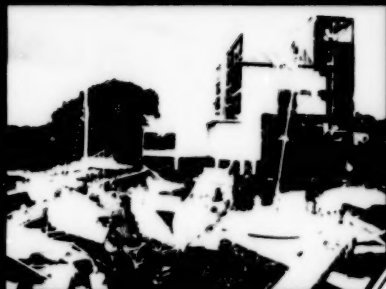
NATIONAL
COMMUNICATION
SYSTEM

FY93 National Communications System's Annual Report



NCS 30th Anniversary

A look at the past history of the National Communications System and the many contributions to benefit our world



Into the 21st Century: Natural and man-made disasters continually threaten and test the reliability of the Nation's communication and information services. This vital link in providing immediate national level response during emergencies has been strengthened by the joint Government industry commitment that has evolved over the last decade. This commitment has been demonstrated by the all hazards response to recent natural disasters such as Hurricane Andrew and the Loma Prieta Earthquake.

1960's: With the Cold War raging and the Soviet Union challenging the resolve of the United States during the Cuban Missile crisis, it became readily apparent to President Kennedy and his key advisors that severe deficiencies existed in their communications systems. During the crisis, timely coordination of critical information

relating to diplomatic, military and intelligence activities was greatly hampered. This caused President Kennedy to establish the National Communications System in 1963.



1990's: The heightened role of communications and information technologies as part of the fabric of both the national and economic security of the Nation has led to the evolution of the National Information Infrastructure. This network of networks will form the information superhighway that will lead the Nation into the Information Age.

1970's: The proliferation of commercial satellite technology provided a viable means of communicating during emergencies. The NCS now incorporates this technology in its ongoing programs and activities.



1980's: With the impending divestiture of AT&T, the Government anticipated the need for increased coordination with the many emerging players in the telecommunication and information industries in order to satisfy NS/EP requirements. The result was the establishment of the President's National Security Telecommunications Advisory Committee, which has successfully served as a means for Government to coordinate NS/EP requirements with industry.



THE WHITE HOUSE

WASHINGTON

April 23, 1993

Dear General Short:

I congratulate the members of the National Communications System (NCS) on 30 years of outstanding service to our Nation.

The accomplishments of the National Communications System over the years are a tribute to the spirit of government cooperation. Your goal of ensuring essential communications for the Federal Government under all conditions is even more important today, as was vividly demonstrated during Operation Desert Storm and in the aftermath of Hurricane Andrew. Your performance in these and other contingencies underscores the value of telecommunications readiness and availability.

I also commend the successful partnership forged between the government and the telecommunications and information industry, as exemplified by your close cooperation with the National Security Telecommunications Advisory Committee. This unique relationship between government and the private sector serves as an outstanding example of the importance of working together to accomplish our economic, national security and technology goals.

As we move into the 21st century, I look to the NCS to continue its leadership role in promoting close cooperation among its 23 member agencies and in fostering a productive partnership with the private sector. I commend you on your past achievements and wish you continued success in the future.

Sincerely,

Bill Clinton

Lieutenant General Alonzo E. Short, Jr. USA
Manager, National Communications System
701 South Court House Road
Arlington, VA 22204-2198

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FOREWORD

Fiscal Year (FY) 1993 was a milestone year for the National Communications System (NCS) as it celebrated its 30th anniversary. After three decades of proud service to the Nation, the NCS continues to answer its charge with vigor. The original goal of the NCS — to achieve interoperability among telecommunication systems of the Federal Government — is just as important today as it was in 1963 when President Kennedy established it.

Since 1963, dramatic changes have taken place worldwide, in both the geopolitical and technological environments. New opportunities present themselves, as technological advances propel our networks into a broadband, digital, multimedia, integrated future. As the role of telecommunications and information processing in the function of Government has expanded and changed, so has the importance of the NCS. The structure of the NCS, a consortium of 23 Federal departments and agencies with national security and emergency preparedness (NS/EP) telecommunication responsibilities, has proven effective in responding to the growing and changing requirements.

The President's National Security Telecommunications Advisory Committee (NSTAC), a Presidential advisory committee created in 1982 in response to the impending divestiture of AT&T and the restructuring of the telecommunications industry, has similarly responded to new taskings. With the Office of the Manager, NCS (OMNCS), serving as the focal point of joint industry/Government planning, the NSTAC has made numerous contributions to NCS programs. For example, the first issue studied by the NSTAC resulted in the establishment of the National Coordinating Center for Telecommunications (NCC), which assists in initiating, coordinating, restoring, and reconstituting NS/EP telecommunication services or facilities under all hazards.

During the past year, the Clinton Administration presented its vision for a National Information Infrastructure (NII). The NCS member organizations, OMNCS, and the NSTAC are responding and contributing to ensure that the NS/EP perspective is considered as the NII evolves — the NCS member organizations and the Office of the Manager through the NCS Vision

21 process, and the NSTAC through its NII Task Force and the participation of several NSTAC member companies on the United States Advisory Council on NII.

The NCS is participating with industry to continue to ensure that survivable, enduring, and effective telecommunication and information systems are in place to fulfill NS/EP requirements throughout the full spectrum of emergencies.



ALONZO E. SHORT, JR.
LIEUTENANT GENERAL, USA
MANAGER



MR. B. E. MORRIS
Deputy Manager
December 21, 1984 to January 3, 1994
(Retired)



COL VICTOR W. BOWSER, USA
Assistant Deputy Manager
and Acting Deputy Manager



DR. DENNIS BODSON
Assistant Manager
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MR. KENNETH B. BOEHM
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Chief
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TABLE OF CONTENTS

	<i>Page Number</i>		<i>Page Number</i>
EXECUTIVE SUMMARY	ES-1	Technology and Standards	2-30
		Baseline Mobilization Program	2-36
I. INTRODUCTION	1-1	National Transportable Telecommunications Capability	2-37
Background	1-2	Enhanced Call Completion	2-37
Report Organization	1-2	Advanced Intelligent Network	2-39
Environment Facing the NCS	1-3	Enhanced Satellite Capability	2-39
Goals and Challenges	1-3	International Emergency Telecommunications Planning Activities	2-41
II. NCS NS/EP TELECOMMUNICATIONS PROGRAMS AND ACTIVITIES	2-1	Appendix to Technology and Standards	2-43
Office of the Manager, NCS, Significant Activities	2-2	III. NS/EP TELECOMMUNICATIONS POLICY AND REGULATORY DEVELOPMENTS	3-1
NCS Committee of Principals/Council of Representatives Interagency Coordination and Consultation	2-3	Executive	3-2
The President's National Security Telecommunications Advisory Committee	2-6	Judicial	3-4
Public Switched Network Security	2-10	Regulatory	3-5
NS/EP Telecommunication Plans and Architecture	2-11	Legislative	3-6
National Level NS/EP Telecommunications Program	2-14		
National Telecommunications Management	2-23		

	<i>Page Number</i>		<i>Page Number</i>
IV. NS/EP TELECOMMUNICATIONS SUPPORT AND ACTIVITIES OF NCS MEMBER ORGANIZATIONS	4-1	National Aeronautics and Space Administration (NASA)	4-54
Overview	4-2	Federal Emergency Management Agency (FEMA)	4-57
NCS Primary Assets	4-2	Federal Communications Commission (FCC)	4-64
Department of State (DOS)	4-6	Nuclear Regulatory Commission (NRC)	4-66
Department of the Treasury (TREAS)	4-7	United States Postal Service (USPS)	4-67
Department of Defense (DoD)	4-10	Federal Reserve Board (FRB)	4-69
Department of Justice (DOJ)	4-15	National Security Agency (NSA)	4-70
Department of the Interior (DOI)	4-17	National Telecommunications and Information Administration (NTIA)	4-71
United States Department of Agriculture (USDA)	4-18		
Department of Commerce (DOC)	4-20	V. NS/EP TELECOMMUNICATION ISSUES	5-1
Department of Health and Human Services (DHHS)	4-26	Public Switched Network Security	5-2
Department of Transportation (DOT)	4-28	National Information Infrastructure	5-3
Department of Energy (DOE)	4-39		
Department of Veterans Affairs (VA)	4-43	APPENDIX A: NCS AND OMNCS ORGANIZATIONS	A-1
Central Intelligence Agency (CIA)	4-45	History of the NCS	A-2
The Joint Staff (JS)	4-46	NCS Administrative Structure	A-2
General Services Administration (GSA)	4-48	NCS-RELATED ACRONYMS	1
United States Information Agency (USIA)	4-53		

LIST OF EXHIBITS

	<i>Page Number</i>		<i>Page Number</i>
2-1 Personnel Support from NCS Member Organizations	2-3	3-1 NCS/NSTAC Role in the NII	3-3
2-2 Status of NCS NLP Funding MOA/IFA for FY93	2-4	4-1 U.S. Department of Commerce Organizational Chart	4-23
2-3 NSTAC Membership	2-8	4-2 Organization of the Office of Command, Control, and Communications (C ³) (DOT)	4-30
2-4 Revised NS/EP Telecommunications Planning Process	2-12	4-3 Command, Control, Communications, and Computer (C ⁴) Directorate (J-6) (JS)	4-47
2-5 GETS Capabilities	2-16	4-4 Organization of the General Services Administration	4-49
2-6 CNS Cellular Proof of Concept	2-18	4-5 NASA Staff Elements Responsible for Nascom, TDRSS, and PSCN	4-55
2-7 MTT Configuration	2-19	4-6 FEMA National Emergency Management System	4-58
2-8 MTT/CSI Test Configuration	2-20	4-7 National Preparedness Directorate (FEMA)	4-59
2-9 CSI Network Elements	2-21		
2-10 CSI Exercise Activities	2-22	A-1 NCS Organizational Chart	A-3
2-11 Operational Elements of the NTMS	2-24	A-2 Office of the Manager, NCS	A-5
2-12 Current NTMS Operating Centers	2-24		
2-13 SHARES HF Radio Stations	2-28		
2-14 Factors Affecting Foreign Dependence Vulnerabilities	2-31		
2-15 NTTC Program	2-37		
2-16 NTTC Capability Demonstration	2-38		
2-17 PSN Restoral	2-40		
2-18 X3 Organizational Chart	2-43		
2-19 TIA Organizational Chart	2-44		
2-20 Structure of Committee T-1, Telecommunications (FY93)	2-45		
2-21 Paths to International Standards Development	2-46		
2-22 New Structure of the International Telecommunication Union	2-48		
2-23 List of FY93 Technical Information Bulletins (TIB's)	2-49		
2-24 Status of Federal Standards	2-50		

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Pursuant to Executive Order (E.O.) 12472 and National Security Decision Directive (NSDD) 97, this report outlines the activities of the National Communications System (NCS) during fiscal year (FY) 1993 in meeting the national security and emergency preparedness (NS/EP) telecommunication policy and objectives of the Federal Government. Major NCS interagency plans, programs, and initiatives, along with significant internal and external factors affecting the NCS, are reviewed in this report. As part of its responsibility to ensure NS/EP telecommunications are available in the event of national emergencies, the NCS coordinates interagency planning and cooperation to meet NS/EP requirements, to develop standards (technical and operating) for an interoperable national telecommunications infrastructure, and to assist the President in the management and coordination of national telecommunication resources during periods of national crises and emergencies.

ANNUAL REPORT OVERVIEW

OFFICE OF THE MANAGER, NCS, SIGNIFICANT ACTIVITIES

In performing its management functions, the Manager, NCS, developed, coordinated, and maintained NCS issuances, records of memoranda of agreement between the NCS and other organizations, and NCS document archives. The following NCS issuances were approved and distributed this year: NCS Manual 3-1-1, "Telecommunications Service Priority (TSP) System for National Security Emergency Preparedness (NSEP) Service User Manual," and NCS Handbook 3-3-1, "Shared Resources (SHARES) High Frequency (HF) Radio Program Directory."

NCS COMMITTEE OF PRINCIPALS/COUNCIL OF REPRESENTATIVES INTERAGENCY COORDINATION AND CONSULTATION

The NCS Committee of Principals/Council of Representatives (COP/COR) addressed programs and activities that will enhance the NS/EP telecommunications of the Federal Government. The COP/COR reviewed and recommended forwarding the Manager's FY95 National Level NS/EP Telecommunications Program (NLP) and funding profile, and the NCS response to the National Security Telecommunications Advisory Committee (NSTAC) XIV Executive Report to the President.

The COP also deliberated on several major NS/EP telecommunication programs and activities. Specifically, the COP reviewed the National Telecommunications Management Structure (NTMS), Network Security of the Public Switched Network (PSN), NCS Vision 21, and TSP System Oversight Committee Membership, and examined and endorsed the revised NS/EP Telecommunications Planning Process.

JOINT INDUSTRY/GOVERNMENT PLANNING

At NSTAC XV, held on May 27, 1993, the NSTAC received and approved a final report and recommendations from the Energy Task Force. The NSTAC approved forwarding recommendations to the President from the Network Security Steering Committee to correct legislative deficiencies affecting the capability to gather evidence about computer crimes. It also approved forwarding recommendations from the NS/EP Panel that the Federal Government support the continuing update of the Federal Response Plan (FRP), and the promotion of a better understanding of the FRP by ensuring that training of Government and industry personnel remains a high priority.

In addition, the NSTAC's subordinate committee, the Industry Executive Subcommittee (IES), established a National Information Infrastructure (NII) Task Force, a Standards Liaison Panel, and a Common Channel Signaling Task Force. In August 1993, the IES disbanded the Enhanced Call Completion (ECC) Ad Hoc Group.

PUBLIC SWITCHED NETWORK SECURITY

The Government Network Security Subgroup (GNSS) and the NSTAC Network Security Steering Committee worked to address the issues involving network security. Specifically, activities have been concentrated in the information exchange and security standards areas.

The Government and industry Network Security Information Exchange (NSIE) groups met bimonthly to exchange information regarding network intrusions and to assess the vulnerability of the PSN to computer intruders. The NSIE groups also recommended changes to the laws relating to computer crimes. The NSIE's recommendation was approved by both the GNSS and NSTAC. On September 14, 1993, the Manager, NCS, sent the recommendation to the Assistant to the President for National Security Affairs. The Network Security Standards Oversight Group focused on defining the scope of the group's efforts and developed a planning strategy to accomplish its purpose.

NS/EP TELECOMMUNICATIONS PLANS AND ARCHITECTURE

The Office of the Manager, NCS (OMNCS), in coordination with member organizations continued to formulate telecommunication plans, programs, and policies that enhance national telecommunications in a crisis or emergency. This planning is coordinated with other Federal telecommunication planning activities to ensure the consideration and use of rapidly emerging technologies that enhance the interoperability of telecommunication systems and networks. The results of coordinated planning functions and activities are used to develop a national, Governmentwide NS/EP telecommunications architecture.

NS/EP Telecommunications

Planning Process.

In conjunction with the NCS Vision 21 Major Focus Area II team, the OMNCS developed a revised NS/EP Telecommunications Planning Process, which focuses on the following key planning elements: a Shortfalls Assessment, and a National Initiatives with appendices for NLP Funding, NCS Baseline Activities, and Target Architecture. The NS/EP Telecommunications Planning Process establishes an NS/EP telecommunications planning mechanism that facilitates the use of Federal Government, commercial/private sector, and State/local government activities and capabilities.

NATIONAL LEVEL NS/EP TELECOMMUNICATIONS PROGRAM

The NLP includes national level programs that are coordinated within the NCS and requires significant Government resources for its preimplementation, implementation, and recurring costs. A review was conducted of the entire NLP and its relationship to current world conditions to include the changing threat, budget environment, and technology. The review assessed each NLP program (Government Emergency Telecommunications Service [GETS], Commercial Network Survivability [CNS], Commercial SATCOM Interconnectivity [CSI]), and associated components against classified and unclassified network failure analyses. The result of this review was to select the NS/EP telecommunication program elements that provide the maximum benefit to the multiple departments and agencies within the NCS.

The FY95 NLP was forwarded to the Executive Office of the President, through the Executive Agent, on May 6, 1993. It identifies three integrated national level NS/EP telecommunication programs — GETS, CNS, and CSI — and provides for the funding and implementation of these programs.

NATIONAL TELECOMMUNICATIONS MANAGEMENT

During a crisis, the Federal Government relies extensively on the Nation's NS/EP telecommunication

resources. To ensure that the telecommunications system meets national leadership requirements, the NCS oversees the following telecommunications management capabilities to ensure survivability and enduring communications during disasters, crises, and emergencies.

National Coordinating Center for Telecommunications (NCC).

The President issued 37 major disaster declarations and 18 emergency declarations this year. The NCC continued to provide international assistance as required in support of the United Nations and other national interests.

National Telecommunications Management Structure.

The Battle Creek, Michigan; Thomasville, Georgia; and Denver, Colorado, Communications Functional Groups (CFG) were validated, thus completing the regional validation of NTMS. In addition, training of National Emergency Management Teams and Regional Emergency Management Team CFG's continued; five NTMS training videos were produced, and two NTMS newsletters were published and distributed.

NS/EP Telecommunications Service Priority System.

The TSP system reached full operating capability in March 1993. The TSP data base contained 18,292 active TSP restoration priorities. One hundred forty-five TSP provisioning priorities were assigned. In addition, the TSP Program Office and the TSP Oversight Committee focused on implementing lessons learned from Hurricane Andrew and continued education efforts targeting the TSP user community.

Shared Resources (SHARES) High Frequency (HF) Radio Program.

Through the use of existing HF radio resources, the SHARES HF Radio Program provides an emergency backup communications capability for NCS departments and agencies in support of NS/EP requirements.

This NCS initiative continued to grow to the current level of 1,008 HF radio stations operated by 39 Federal and federally affiliated organizations. The SHARES HF Interoperability Working Group continued to expand awareness of SHARES within the Federal emergency response community, maintained the readiness of SHARES by conducting four worldwide HF exercises, and fostered HF radio interoperability through the examination of several regulatory, procedural, and technical issues.

Other national telecommunication activities included:

- ▼ Dr. John H. Gibbons took the oath of office as Assistant to the President for Science and Technology and Director, Office of Science and Technology Policy (OSTP), on February 2, 1993. The Joint Telecommunications Resources Board supports the Director, OSTP, in carrying out his nonwartime emergency responsibilities.
- ▼ The NCS and NCC successfully participated in Exercise Response '93 and two Telecommunications Emergency Response Training Seminars.
- ▼ The Federal Emergency Management Agency formed an interdepartmental Response Planning Task Force to review the implementing procedure of the FRP that was necessary to achieve operational readiness for the 1993 hurricane season. The OMNCS has incorporated lessons learned from the implementation of the FRP into its overall training and exercise program.
- ▼ OMNCS Augmentee Programs continued their development.

TECHNOLOGY AND STANDARDS

Technology activities focused on workshops, studies, analyses, and assessments. Specific efforts included wireless services, dependence on foreign sources, modeling, micrometer fiber data links, electromagnetic pulse, facsimile, and high definition television.

Standards activities focused on development of Federal standards, and participation in commercial standards development within national and international standards organizations. Specific efforts for improved NS/EP telecommunications included application/service areas such as integrated service digital network (ISDN), broadband ISDN, asynchronous transfer mode, synchronous optical network, multimedia, facsimile, telecommunications management network, and universal personal telecommunications. Significant accomplishments for improved NS/EP telecommunications included American National Standards Institute's approval and publishing of a High Probability of Completion standard.

NCS BASELINE MOBILIZATION PROGRAM

The NCS Baseline Mobilization Program implements the recommendations of the Joint Industry-Government Telecommunications Industry Mobilization Group. The OMNCS developed an implementation approach that includes identification of task responsibilities, a time-phased work plan, and a schedule of status reports. The OMNCS forwarded a report to the NSTAC's IES on the status of the recommendations.

NATIONAL TRANSPORTABLE TELECOMMUNICATIONS CAPABILITY

The National Transportable Telecommunications Capability (NTTC) is a rapidly deployable, integrated satellite and cellular telecommunications system. The OMNCS conducted a test that demonstrated NTTC capabilities to handle additional cell sites for multiple remote sites and an increased number of users. The OMNCS also initiated a study to analyze various technologies to identify modular cost and operationally effective follow-on systems that support NS/EP users during and after crises.

ENHANCED CALL COMPLETION

In July 1992, the NSTAC published the final report of the ECC Task Force. It identified 23 existing and future capabilities with the potential for enhancing the completion of NS/EP calls during periods of stress to

the PSN. An analysis was completed on ECC capabilities, which included inputs from NCS member organizations on potential user benefits, and inputs from industry representatives on cost implications. A demonstration of selected ECC services and features was completed. Implementation of the ECC features is an objective of the GETS, CSI, and CNS programs, and the subject of an NCS Member Agency Telecommunications Enhancement Handbook, dated August 26, 1993.

ADVANCED INTELLIGENT NETWORK

Advanced Intelligent Network (AIN) is an evolving, service-independent technology currently being implemented by major telecommunication carriers. Its elements control and interact with switches to allow for the special handling of calls, which can provide many benefits to NS/EP subscribers. The AIN Program Office was established by the OMNCS to lead Government research and development of intelligent networks that support NS/EP telecommunications.

ENHANCED SATELLITE CAPABILITY

The Enhanced Satellite Capability (ESC) program is designed for Government to experiment with, evaluate, assess, and document new experimental communication satellite capabilities and technologies that can be applied to support and enhance existing and future NS/EP requirements. The ESC program is focused on experimentation efforts and assessment studies. Experimentation efforts include working with the National Aeronautical and Space Administration to participate in the Advanced Communications Technology Satellite program. Technology assessment studies include the American Mobile Satellite Corporation effort, for which the NCS is developing and designing experiments to demonstrate the mobile capabilities of this near-term Mobile Satellite System. Enhanced satellite studies are also being conducted to examine long-term mobile satellite systems and to evaluate the potential for applying these capabilities and technologies to NS/EP requirements.

INTERNATIONAL EMERGENCY TELECOMMUNICATIONS PLANNING ACTIVITIES

The OMNCS engaged in international emergency telecommunications planning with the following organizations:

- ▼ United States/Canada Civil Emergency Planning Committee for Telecommunications
- ▼ North Atlantic Treaty Organization Civil Communications Planning Committee.

The United States/Canada Civil Emergency Planning Committee for Telecommunications reviewed and revised the Terms of Reference of the Committee for Telecommunications. The North Atlantic Treaty Organization Civil Communications Planning Committee revised its compendium, work programs, and activities. This revision enabled the Planning Committee to reduce by half its subcommittees and their associated yearly meetings.

NS/EP TELECOMMUNICATION POLICY AND REGULATORY DEVELOPMENTS

Several executive, judicial, regulatory, and legislative developments occurred. The Modified Final Judgment restrictions were lessened due to Regional Bell Operating Company (RBOC) and congressional pressure. Specific judicial areas that were addressed this year include information services, inter-LATA (local access and transport area) service, and manufacturing telecommunications equipment. In addition, two RBOC subsidiaries have challenged the Cable Communications Policy Act of 1984 in court. In the regulatory arena, the Federal Communications Commission (FCC) has continued its policy of encouraging competition in the marketplace, and encouraging the development of network reliability and spectrum allocation initiatives. Legislative activities covered the following areas: enhancing competition in the local exchange, modernizing the local telecommunications infrastructure, auctioning and reallocating the frequency spectrum, establishing a subordinate FCC

board to investigate network outages, defining the Federal Government's role in the NII, allowing telephone and cable company cross-ownership, and enacting legislation to allow coordination among the telecommunications industry to improve the NII. These NII developments place the NCS in a unique position to respond to the related NS/EP issues through existing interagency and joint industry-Government mechanisms.

NS/EP TELECOMMUNICATIONS SUPPORT AND ACTIVITIES OF NCS MEMBER ORGANIZATIONS

NCS member organization submissions to the NCS Annual Report review members' financial, policy, and technical concerns. These submissions continued to show a growing trend toward consolidation of telecommunication services, and to reflect the importance members place on telecommunication resources to supply uninterrupted performance of essential emergency functions.

NS/EP TELECOMMUNICATION ISSUES

NCS member organizations identified the following issues for Executive Office of the President review and consideration: Public Switched Network Security and the NS/EP implications of the National Information Infrastructure.

I. INTRODUCTION

This year, the National Communications System (NCS) celebrated its 30th anniversary. Thirty years ago, the NCS was established to focus mainly on providing the plans, policy, and program focus for the member organizations to develop improvements to the national security telecommunications infrastructure to ensure the responsiveness and survivability of essential telecommunications during an emergency or crisis. The NCS was constituted and given its mission in a Presidential Memorandum signed by President Kennedy on August 21, 1963. The memorandum described a single, unified NCS to be formed by "linking together, improving, and extending on an evolutionary basis the communications facilities and components of the various Federal agencies . . . to provide necessary communications for the Federal Government under all conditions ranging from a normal situation to national emergencies and international crises, including nuclear attack."

In April 1984, the signing of Executive Order (E.O.) 12472, "Assignment of National Security and Emergency Preparedness Telecommunications Functions," changed the mission focus of the NCS from planning and coordinating a single unified Government communications system to its present mission of assisting the President and the Executive Office of the President (EOP) in exercising wartime and nonwartime emergency telecommunications, and in the coordination of the planning for and provisioning of NS/EP communications for the Federal Government under all circumstances.

In order to successfully fulfill its mission, the NCS is structured to foster interagency cooperation and to serve as a focal point for joint industry/Government NS/EP telecommunications coordination and planning. Administratively, the NCS consists of the Executive Agent, NCS; the NCS Committee of Principals (COP); and the Manager, NCS (see

Appendix A for further discussion and corresponding organizational charts). In partnership with the NCS, the President's National Security Telecommunications Advisory Committee (NSTAC) provides advice and expertise to the President and the Executive Agent, NCS, on issues and problems related to implementing NS/EP telecommunications policy.

BACKGROUND

The fiscal year (FY) 1993 NCS Annual Report, issued by the OMNCS in coordination with the COP, summarizes and highlights significant NCS NS/EP telecommunication events, activities, and accomplishments during the fiscal year. The NS/EP telecommunications posture of the Nation, major NCS interagency plans, programs, and initiatives, and significant internal and external factors affecting the NCS are reviewed in this report.

REPORT ORGANIZATION

This report has five sections, which collectively present the coordinated efforts of the NCS 30th anniversary year.

- ▼ Section I describes the present planning environment and the major challenges facing the NCS.
- ▼ Section II summarizes significant NCS NS/EP telecommunication programs, activities, and accomplishments.
- ▼ Section III examines external factors influencing the NCS, including significant executive, judicial, regulatory, and legislative developments affecting NS/EP telecommunication services.
- ▼ Section IV reviews NS/EP telecommunication activities and accomplishments of the NCS member organizations.

▼ Section V details NS/EP telecommunication issues for consideration by the EOP.

ENVIRONMENT FACING THE NCS

Entering its fourth decade of service to the President and to the Nation, the NCS is responding to its NS/EP telecommunications mission with its traditional vigor. The dramatic changes in the political, economic, and technical environments continue to alter the national security and economic posture of the United States. Because a massive nuclear attack is no longer the major threat to the United States, the NCS has increased its emphasis in areas where security, socio-economic concerns, and telecommunications technology converge. Examples of this convergence are the President's National Information Infrastructure (NII) initiative and communication issues raised by the Nation's growing reliance on electronic computerized information transfer resources.

The NII initiative, as envisioned by President Clinton and his administration, is one way of effectively using advanced technology to improve Government and business efficiency, improve cost management of health care delivery, and expand educational programs. The development of this initiative will benefit the Nation's increasingly urgent socio-economic agenda through intensified national competitiveness, as private industry improves the telecommunications and information infrastructure, develops new technologies such as wireless communications, expands digital technology in the public switched networks (PSN), and deploys fiber optic technology to end users. These activities promote a vibrant economy that will carry the United States into the 21st century.

The Nation's growing reliance on the powers of information transfer and the rapid pace of new technology insertion, which increases communication and computing powers, have raised concerns about associated risks and vulnerabilities capable of disrupting or destroying PSN services to a wide array of end users. Much has been accomplished, but more work lies ahead in addressing these concerns and reducing the

impact of disruption or destruction of the Nation's vital communication services.

Natural and manmade disasters continue to threaten the continuity of communication services in the United States. Telecommunications is a vital link in Federal response strategies, providing immediate and coordinated national-level attention to catastrophic emergencies. Federal relief efforts during Hurricanes Andrew and Iniki demonstrated the important all-hazards response role the NCS assumes during domestic emergencies.

Responses to humanitarian assistance efforts around the world are an increasing component of NCS activities. The United States response to recent situations in Somalia and the former Yugoslavia typify the varied political and military challenges present in a multipolar world. In an environment dominated by resource constraints, the role of the NCS and the National Coordinating Center for Telecommunications (NCC), in supporting telecommunications and information processing to ensure a flexible response to global contingencies, is of increasing importance.

The threat of a massive nuclear attack is much diminished, but the proliferation of nuclear, chemical, and biological technologies in the post-Cold War era present new and more complex challenges. Hostile attacks by an unfriendly nation or terrorist group against domestic targets represent an unpredictable threat that could seriously degrade our telecommunication and information infrastructures. Efforts to reduce the effects of these threats continue and still require significant attention.

GOALS AND CHALLENGES

The Manager's primary goals under E.O. 12472 are to position the NCS to address two key areas:

- ▼ Implementing an effective management system to facilitate the restoration, provisioning, and operation of the Nation's telecommunication resources to support the NS/EP mission during the entire spectrum of emergencies

▼ Defining and implementing NS/EP enhancements to the national communications infrastructure.

The next year brings with it new challenges for the NCS as the political, socio-economic, and technical landscape evolves. In its National Performance Review (NPR), the administration challenges all Federal organizations to reevaluate programs and to identify new, more efficient and effective ways of accomplishing missions. As such, the NCS challenge is to identify creative ways in which to streamline its programs, activities, and processes without losing sight of its primary goals.

It is imperative that the NCS, in partnership with the NSTAC, industry, and other Government entities, continue to bring NS/EP telecommunication issues and recommendations concerning the NII to the attention of the President's Information Infrastructure Task Force (IITF). In so doing, the NCS can help shape appropriate Government telecommunication information policies and applications for the NII that incorporate and support NS/EP requirements. By recommending emerging technologies, commercial standards, services, and features for inclusion in the NII initiative, the NCS can assist the IITF in building an NII that ensures the reliability, security, interoperability, and enhancement of NII services for both emergency and nonemergency use.

The NCS must continue to proactively address the risks and vulnerabilities associated with the Nation's telecommunication and information systems through participation in industry and Government groups evaluating network reliability and security. In addition, the NCS, in consonance with industry, must continue its work of recommending technical standards and regulatory guidelines that provide emergency priority treatment of NS/EP calls when networks are congested or damaged, or when service is otherwise degraded. As an active player in industry and Government telecommunication initiatives, the NCS must ensure that current and future policies and applications that pertain to emergency mission require-

ments are included in the designs and architectures of existing networks and in the NII.

Given the changing world environment, the intensified focus on national disaster response, and the Nation's involvement in humanitarian assistance efforts, the NCS must continue to adapt its plans and programs to respond to all hazards, natural and man-made. It must rely on the collective interagency resources of all member organizations and the coordinating capabilities of the NCC in responding to any all-hazards scenario. In so doing, increased emphasis must be placed on interagency interoperability; planning and implementing coordinated architectures; and on developing operational procedures.

Development and enhancement of the availability of telecommunication services, through efforts such as the National Level NS/EP Telecommunications Program and the National Telecommunications Management Structure, must continue. By continuing these efforts, the Nation is ensured of having a survivable and enduring national telecommunications infrastructure, effective infrastructure management mechanisms, and value-added enhancements for the direction and operation of national telecommunication resources that support national leadership requirements under all conditions.

With 30 years of service in responding to our Nation's NS/EP requirements, the NCS is in a unique position to respond to all challenges through existing interagency and joint industry/Government mechanisms. The expertise provided through partnership of industry and Government ensures that the major role of the NCS is consistent with the Administration's NII initiative, meets the Administration's objectives and provides an efficiently managed, reliable, and secure national infrastructure that supports NS/EP emergency mission requirements and nonemergency socio-economic requirements.

II. NCS NS/EP TELECOMMUNICATION PROGRAMS AND ACTIVITIES

This section highlights the activities and accomplishments of the OMNCS and the NS/EP telecommunications community during fiscal year (FY) 1993.

Office Of The Manager, NCS, Significant Activities

In performing its management functions, the OMNCS coordinated and maintained NCS issuances, records of memoranda of agreement (MOA) between the NCS and other organizations, and NCS document archives.

THE NATIONAL COMMUNICATIONS SYSTEM ISSUANCE SYSTEM

The NCS Issuance System governs policy and guidance issuances that concern the internal organization, policies, procedures, practices, management, and/or personnel of the NCS. The following NCS issuances were approved and distributed this year:

- ▼ NCS Manual 3-1-1, "Telecommunications Service Priority (TSP) System for National Security Emergency Preparedness (NSEP) Service User Manual"
- ▼ NCS Handbook 3-3-1, "Shared Resources (SHARES) High Frequency (HF) Radio Program Directory."

PERSONNEL AND FUNDING SUPPORT FOR THE NCS

The Executive Office of the President (EOP) instructed NCS member organizations to execute MOA's and interagency funding agreements (IFA) with the Manager, NCS, regarding personnel and funding support for the National Level NS/EP Telecommunications Program (NLP).

Personnel Support.

Pursuant to Executive Order (E.O.) 12472, Section 3, paragraph (i), subparagraph (3), MOA's with the Manager, NCS, regarding personnel support were executed by NCS member organizations. Exhibit 2-1 depicts the personnel support provided to the Manager, NCS, by each member organization at the close of the reporting period.

NLP Funding Support.

For FY93 and 94, the EOP directed that the implementation and recurring costs for the NLP should be shared by the Department of Defense (DoD) and the Federal Emergency Management Agency (FEMA) based on an agreement to split the required funding levels for each year. DoD, as Executive Agent for the NCS, will fund all preimplementation costs for the NLP. Beginning in FY95, all costs for the NLP will be funded by the Executive Agent, NCS. Exhibit 2-2 shows the status of NCS NLP funding MOA's and IFA's that were executed in FY93.

"NS/EP TELECOM NEWS"

The "NS/EP Telecom News," published bimonthly by the NCS Office of the Joint Secretariat, provides an NS/EP impact assessment for the NCS and NS/EP telecommunications community, and helps the NCS keep abreast of legislative, regulatory, judicial, technological, and executive developments. In FY93, "NS/EP Telecom News" provided:

- ▼ In-depth discussions of personal communication networks (PCN) and wireless communication services, telecommunication issues facing the 103rd session of Congress, competition in the local exchange market, network management and open systems, and transmission performance standards

EXHIBIT 2-1

Personnel Support From NCS Member Organizations

3	DOS
1	TREAS
107 ²	DoD
12	• U.S. Army (2 Vacancies)
2	• U.S. Navy
11	• U.S. Air Force
75	• Civilian
5 ³	• DISA
1	DOJ
0 ⁷	DOI
0 ⁶	USDA (1 Vacant)
0 ⁷	DOC
1	HHS
1 ⁶	DOT (1 Vacant)
0	• U.S. Coast Guard (Vacant)
1	• Federal Aviation Administration
1	DOE
1	VA
2	CIA
N/A	JS
2 ⁴	GSA
0 ⁵	USIA
2	NASA
2 ⁵	FEMA
1 ¹	FCC
0 ⁷	NRC
0 ¹	USPS
0 ¹	FRB
1	NSA
0 ⁷	NTIA

1. Liaison membership status; no support requirements
2. DoD authorizations as of 9/30/93
3. DISA comptroller personnel supporting Manager, NCS
4. Other GSA-furnished personnel: 4 reserve on-call to NCC, 11 part-time regional communications managers, and 4 full-time planners
5. One position assigned to NCC
6. (1 vacant) means a MOA exists and per MOA, 1 position is vacant
7. No MOA in place at this time

- ▼ A special edition dedicated to the TSP system
- ▼ A special edition to commemorate the 30-year anniversary of the NCS.

NCS BULLETIN BOARD SYSTEM

The NCS Bulletin Board System (BBS) was designed to help manage Committee of Principals (COP), Council of Representatives (COR), and National Security Telecommunications Advisory Committee (NSTAC) related activities. The NCS BBS is on-line 24 hours a day, 7 days a week. The NCS BBS provided the following useful capabilities:

- ▼ Messaging. The ability to exchange messages among users of the NCS BBS.
- ▼ Files. The capability to upload files to a files area for other participants of the BBS to download to their systems to read; and the capability to download files, provided by the OMNCS, that are official and informative.
- ▼ Bulletins. The bulletins included a list of operating instructions, an electronic version of the "NS/EP Telecom News," information on whom to call for assistance, a calendar of upcoming NSTAC and NCS scheduled events, health hints, sports schedules, humor, and an up-to-date copy of the OMNCS Telephone Directory.

The BBS software and hardware have been upgraded. In addition, the BBS is scheduled to be upgraded to two lines, both capable of operating at 14,400 baud, by January 1, 1994 (estimated).

NCS Committee Of Principals/Council Of Representatives Interagency Coordination And Consultation

The NCS COP is an interagency group that provides advice and recommendations on NS/EP telecommuni-

EXHIBIT 2-2

Status of NCS NLP Funding MOA/IFA for FY93

Organization	MOA Signed By NCS	Signed By Organization	IFA Signed By Organization	FY93 NLP Funding Shares
DoD FEMA	N/A February 2, 1993	N/A December 14, 1992	N/A January 7, 1993	\$27,511,000 \$4,120,000
				Total \$31,631,000

cation programs and activities. These recommendations are submitted to the EOP through the Executive Agent, NCS. The COP established the COR as a permanent, subordinate group to address detailed NS/EP telecommunication issues. Together, these groups address the complex NS/EP telecommunication needs of the 23 NCS member organizations.

SUMMARY OF COMMITTEE OF PRINCIPALS INTERAGENCY ACTIVITIES

The COP conducted the following activities:

- ▼ Recommended forwarding the Manager's proposed FY95 NLP and funding profile to the EOP through the Executive Agent
- ▼ Reviewed and forwarded the NCS response to the NSTAC XIV Executive Report to the President
- ▼ Examined and endorsed the revised NS/EP Telecommunications Planning Process
- ▼ Forwarded NCS Directive 2-1, "National Security and Emergency Preparedness (NS/EP) Telecommunications Planning Process"
- ▼ Examined a revised NCS Directive 2-2, "National Level NS/EP Telecommunications Program (NLP) Funding"
- ▼ Reviewed and forwarded NCS Vision 21 Major Focus Area (MFA) I's new planning process
- ▼ Approved NCS Vision 21 MFA II's approach to the Telecommunications Shared Assets initiative
- ▼ Established NCS Vision 21 MFA VI, "The National

Information Infrastructure"

- ▼ Approved changes to NCS Manual 3-1-1, "Telecommunications Service Priority (TSP) System for National Security Emergency Preparedness (NSEP) Service User Manual"
- ▼ Nominated Federal members to the TSP System Oversight Committee.

The COP deliberated on major NS/EP telecommunication programs and activities, including the following:

- ▼ The National Telecommunications Management Structure (NTMS). The COP reviewed the activities and conclusions of regional NTMS validations. The COP also reviewed the implementation status of the National Telecommunications Coordinating Network, which is the primary telecommunications capability supporting the operation of the NTMS.
- ▼ Network Security of the Public Switched Network (PSN). The COP periodically examined activities in the areas of standards research and development, network security information exchanges (NSIE), and other network security projects.

SUMMARY OF COUNCIL OF REPRESENTATIVES INTERAGENCY ACTIVITIES

As directed by the COP, the COR undertook the following NS/EP telecommunication activities:

- ▼ Reviewed the FY92 NCS Annual Report and recommended that the COP approve the FY92 Final Draft for publication and distribution

- ▼ Reviewed the NS/EP Telecommunication Candidate Initiatives document and recommended that the COP consider it for approval
- ▼ Formed a working group to develop a concept of operations and implementation plan for agencies to share telecommunications assets, with the intent of establishing a Communications Resource Information Sharing Program (CRISP)
- ▼ Facilitated COP consideration of TSP System Oversight Committee Membership nominations
- ▼ Discussed NCS participation in Global 93.

ACTIVITIES OF INTERAGENCY SUBCOMMITTEES

The interagency subcommittees established by the COP/COR address issues and concerns demanding a high degree of analysis and discussion. By devoting efforts to a specific NS/EP telecommunications matter, each subcommittee focuses on generating viable recommendations. The subcommittees are discussed below.

- ▼ The activities of the Shared Resources (SHARES) High Frequency (HF) Interoperability Working Group included updating the SHARES directory (NCSH 3-3-1) and distributing the revised directory to more than 1,000 SHARES stations, COP/COR members, and Federal emergency planning and response personnel. The SHARES Working Group continued to expand awareness of SHARES, within the Federal emergency response community, by discussing SHARES at more than two dozen NCS department and agency conferences and seminars. The working group planned and conducted four readiness and training exercises and continued to address HF interoperability issues, including Automatic Link Establishment (ALE), antenna testing, and SHARES station coordination procedures.
- ▼ The Communications Resources Information Sharing Program (CRISP) Development Working Group was formed as a result of the NCS Vision 21

MFA II group's identification of a need to develop a recommended approach and framework for identifying and maintaining a compendium of communication assets. CRISP will provide a planned, systematic approach to the potential sharing of telecommunication resources among Federal departments and agencies in support of missions during emergency situations. The CRISP Working Group, as tasked by the COP, developed a proposed concept of operations and an implementation plan.

Special Meeting. On March 25, 1993, the COP held a special meeting to discuss the revised NCS NS/EP Telecommunications Planning Process. Subsequently, the COP approved the revised NS/EP Telecommunications Planning Process document and the associated NCS Directive 2-1, "National Security and Emergency Preparedness (NSEP) Telecommunications Planning Process."

NCS Vision 21. NCS Vision 21 is a Total Quality Management (TQM) process, established by the COP, COR, and senior members of the OMNCS, that focuses on the NCS's purpose, mission, and vision into the next century. Five MFA groups were initially created to identify NCS growth and enhancement strategies. Since its inception, MFA III — FOCUS — completed its mission, and the supporting conditions of MFA IV — PROCESS — were subsumed by other MFA's.

MFA I, NCS PROCESS/SERVICES, in coordination with the OMNCS, developed a revised NCS NS/EP Telecommunications Planning Process. The modifications were proposed to the COP and resulted in the adoption of a new planning process. MFA II, INTEROPERABILITY, developed an approach for sharing interagency telecommunications assets that was approved by the COP and, subsequently, named the CRISP. The COP tasked the CRISP Working Group to formulate a concept of operations and implementation plan. MFA V, IMAGE, organized an Emergency Planners Seminar to be held in early FY94.

In July 1993, an NCS Vision 21 off-site conference was held to evaluate the achievements of the past

fiscal year and to plan actions for FY94. In response to changes in the national environment, MFA VI, NATIONAL INFORMATION INFRASTRUCTURE (NII), was established to ensure that NS/EP issues are considered in the administration's NII initiative.

Each MFA group continues to meet periodically to implement its responsibilities, streamline its tasks, and eliminate overlapping responsibilities through coordination of its activities with other MFA groups. The chairs of the MFA's (Goalkeepers) constitute an Executive Board, and meet quarterly to manage the overall objectives of the Vision 21 initiative and report the status of their work to the COP.

Government Network Security Activities. Government and industry are concerned about computer intruders attacking the software controlling the PSN's switches and automated support systems; these attacks can interrupt or deny service to NS/EP users or extract sensitive NS/EP information.

In April 1990, the Chairman, Policy Coordinating Committee for National Security Telecommunications and Information Systems (PCC-NSTIS), tasked the Manager, NCS, to determine which actions were required from the Government and industry to address the threat to the PSN by computer intruders. In response, the Manager established the Government Network Security Subgroup (GNSS) to work closely with the NSTAC Network Security Task Force (NSTF) to establish separate Government and NSTAC NSIE's. The NSIE's meet jointly, approximately every 2 months, to identify issues and exchange information regarding unauthorized penetration or manipulation of software and data bases affecting NS/EP telecommunications.

The NSIE groups addressed the risks to the PSN from electronic intruders by exchanging information on threats and vulnerabilities. The members have been able to use this information to mitigate potential risks to the PSN. The NSIE groups also developed a list of recommended changes to computer crime laws that the Manager, NCS, sent to the White House in September. The NSTAC approved a similar recom-

mendation to be sent to the White House in a letter to the President on the recommendations of NSTAC XV. These modifications would help create a more effective deterrent to computer intrusion.

The National Coordinating Center for Telecommunications (NCC) has been designated to perform an Alert, Warning, and Recovery function for network security in which it will receive and disseminate network security information to the NSIE's and the NS/EP community. The NCC ensures that the procedures for the Alert, Warning, and Recovery function, issued July 25, 1991, are reviewed and kept accurate.

Information Presentations. COP/COR members received the following informational briefings:

- ▼ The General Services Administration (GSA) briefed the Federal Emergency Communications Coordinator's response during Hurricane Andrew.
- ▼ GSA also briefed the enhancements to, and the future plans for, the Federal Telecommunications System (FTS) 2000.
- ▼ The NCC briefed the issues considered for managing "Special Facility" outage reporting to the Federal Communications Commission (FCC).
- ▼ The National Institute of Standards and Technology (NIST) briefed a new approach to communications encryption technology developed by the Federal Government.

The President's National Security Telecommunications Advisory Committee

The President's NSTAC consists of 27 (up to 30 are authorized) senior corporate leaders (typically chief executive officers) representing major telecommunication industry carriers, manufacturers, information systems providers, and aerospace firms (see Exhibit 2-3). Established by E.O. 12382 in September 1982, the

NSTAC provides advice and expertise to the President and the Executive Agent, NCS, on issues and problems related to implementing NS/EP telecommunications policy. The NSTAC's Industry Executive Subcommittee (IES) and its working groups, task forces, and other subordinate groups analyze NS/EP telecommunication issues and report their activities and recommendations through the NSTAC to the President. Because the OMNCS is the focal point for joint industry/Government planning, all NSTAC activities are supported by, and closely coordinated with the OMNCS.

NSTAC XV. At the 15th meeting of the President's NSTAC, held May 27, 1993, the following telecommunication issues and recommendations were presented by each NSTAC subordinate group, and were later forwarded to the President:

Energy. The Energy Task Force recommended that the Government:

- ▼ Continue to support the operation, administration, and management of the Department of Energy's (DOE) Telecommunications Electric Service Priority (TESP) initiative. (Note: DOE is implementing the TESP initiative. As of September 1993, 30 States agreed to participate and more acceptances are anticipated.)
- ▼ Assign Federal responsibility for the establishment of a program to ensure priority availability of fuel supplies for telecommunication companies during emergencies.
- ▼ Encourage the Nation's electric utilities to coordinate with telecommunication companies to provide safe access to disaster areas requiring TSP provisioning or restoration.
- ▼ Encourage State and local governments to modify their emergency plans to allow telecommunication, electric utility, and fuel supply companies access into affected areas.
- ▼ Modify the Federal Response Plan (FRP) and the National Plan for Telecommunications Support in

Non-Wartime Emergencies to include TESP, and to address emergency fuel resupply, access, and safety issues.

The Energy Task Force also recommended in the Energy Task Force Report that, to address the improvement of electric power survivability under disaster conditions, the President's National Energy Strategy should:

- ▼ Increase research and development (R&D) and incentives to reduce transmission and distribution vulnerabilities
- ▼ Evaluate locating dispersed power generation closer to customer loads as a possible means of further reducing transmission and distribution vulnerabilities
- ▼ Focus more R&D on alternative backup power technologies for the telecommunication industry by encouraging cooperative R&D agreements between United States national laboratories and interested telecommunication companies.

National Security and Emergency Preparedness.

The NS/EP Panel proposed the following recommendations to the President:

- ▼ The Federal Government should support continuing efforts to update the FRP, especially Emergency Support Function (ESF) #2 (Communications) using 1992 experiences.
- ▼ The Federal Government, to promote better understanding of the FRP, should ensure that training of Federal, State, local, and industry personnel remains a high priority.

Network Security Recommendations. The Network Security Steering Committee (NSSC) proposed the following recommendation to the President:

- ▼ Correct the legislative deficiencies affecting the capability to gather evidence about computer crimes, and prosecute and convict computer criminals who target computers that support the national telecommunications infrastructure.

EXHIBIT 2-3

NSTAC Membership

Mr. Robert E. Allen	Chairman of the Board and Chief Executive Officer, AT&T (NSTAC Chairman, October 1991 - May 1993)
Dr. George H. Heilmeier	President and Chief Executive Officer, Bell Communications Research, Inc. (Bellcore)
Mr. Stanley C. Beckelman	President, Boeing Computer Support Services
Mr. Bruce L. Crockett	President and Chief Executive Officer, Communications Satellite Corporation (COMSAT)
Mr. William R. Hoover	President and Chairman of the Board, Computer Sciences Corporation (CSC)
Mr. Lester M. Alberthal, Jr.	Chairman, President, and Chief Executive Officer, Electronic Data Systems (EDS)
Mr. Charles R. Lee	Chairman of the Board and Chief Executive Officer, GTE Corporation
Mr. John T. Hartley	Chairman, President, and Chief Executive Officer, Harris Corporation
Mr. C. Michael Armstrong	Chairman and Chief Executive Officer, Hughes Aircraft Company
Mr. Gerald W. Ebker	Chairman and Chief Executive Officer, International Business Machines (IBM) Federal Systems
Mr. William J. Hilsman	Chairman, InterDigital Communications Corporation
Mr. D. Travis Engen	Executive Vice President, ITT Corporation
Mr. John N. McMahon	President, Lockheed Missiles and Space Systems Group
Mr. Norman R. Augustine	Chairman and Chief Executive Officer, Martin Marietta Corporation (NSTAC Vice Chairman, October 1991 - May 1993; NSTAC Chairman, May 1993)
Mr. Craig O. McCaw	Chairman and Chief Executive Officer, McCaw Cellular Communications, Inc.
Mr. Bert C. Roberts, Jr.	Chairman and Chief Executive Officer, MCI Communications Corporation
Mr. Royce J. Holland	President and Chief Executive Officer, Metropolitan Fiber Systems Communications Company
Mr. John F. Mitchell	Vice Chairman of the Board, Motorola, Inc.
Mr. Roy Merrills	Chairman of the Board, Northern Telecom, Inc.
Mr. Charles E. Robinson	Chairman and Chief Executive Officer, Pacific Telecom, Inc.
Mr. Kent M. Black	Executive Vice President and Chief Operating Officer, Rockwell International Company
Mr. William T. Esrey	Chairman and Chief Executive Officer, Sprint Corporation (NSTAC Vice President, May 1993)
Mr. Joseph T. Gorman	Chairman and Chief Executive Officer, TRW, Inc.
Mr. Albert F. Zettlemoyer	Senior Vice President, UNISYS/Paramax
Mr. Robert C. Brown, III	Chairman of the Board, U.S. Telephone Association
Mr. Richard D. McCormick	Chairman and Chief Executive Officer, US West, Inc.
Mr. Roy A. Wilkens	President, Williams Telecommunications Group (Wiltel)

Industry Executive Subcommittee Activities.

The IES and its subordinate groups considered a range of issues affecting NS/EP telecommunications.

Network Security Activities. The IES's NSSC, its Network Security Standards Oversight Group (NSSOG), and the NSTAC's NSIE continued their respective efforts with regard to network security standards and mitigating the threat of unauthorized intrusions and manipulation of network software and data bases affecting NS/EP telecommunications. There was a significant level of cooperation between industry and Government in recommending changes to computer crime laws, and an enhanced trust and sharing of information among information exchange group members regarding computer intrusion incidents and threats.

National Information Infrastructure. The IES tasked the Plans Working Group to:

- ▼ Scope the NII issue to determine if a task force study is required.
- ▼ Study the national network architecture and its relation to the President's plan of February 22, 1993, "Technology for America's Economic Growth, A New Direction to Build Economic Strength," as well as the use of the national network architecture to serve as a national security telecommunications system for emergency preparedness dual use, i.e., commercial and NS/EP applications.

Based on the Plans Working Group's subsequent evaluation and recommendation, the IES established the NII Task Force and charged it to provide an interim report at NSTAC XVI (March 1994), and a final report, with recommendations to the President, at NSTAC XVII, that:

- ▼ Identifies, in collaboration with the Government, potential dual-use applications of the NII and recommends Government actions.
- ▼ Identifies potential NS/EP implications of NII and

recommends Government actions. As a minimum, addresses items identified by the Director, Office of Science and Technology Policy (OSTP) at NSTAC XV (e.g., security, resiliency, interoperability, standards, and spectrum).

- ▼ Advises Government on technical and other considerations that will accelerate commercialization of a nationwide high-speed network available to NS/EP users. As a minimum, addresses architectural, policy, and regulatory issues, along with those R&D focus areas, pilot/demonstration projects, and civil/military telecommunication issues identified by OSTP/National Economic Council.

To begin these tasks, the NII Task Force met three times and received several information briefings from the Government concerning the NII initiative.

Standards. The IES tasked the Operations Working Group to establish and oversee a Standards Liaison Panel to:

- ▼ Address NS/EP telecommunication standards other than network security
- ▼ Focus identified standards issues
- ▼ Obtain assistance from industry standards experts
- ▼ Seek to influence national and international standards organizations to develop standards that meet NS/EP requirements.

The Operations Working Group selected an initial panel and chairperson. However, since the Standards Liaison Panel was formed, no issues have been presented.

Common Channel Signaling. The IES established the Common Channel Signaling (CCS) Task Force to:

- ▼ Determine if there are failure mechanisms that could potentially lead to widespread, long-duration CCS outages among multiple interconnected carriers
- ▼ Evaluate the risk to NS/EP user telecommunications

- ▼ Examine, if significant risk exists, procedural or technological alternatives for its mitigation
- ▼ Present appropriate recommendations to NSTAC XVI.

The CCS Task Force met extensively to gather information and to determine if failure mechanisms exist that could lead to widespread, long-duration CCS outages among multiple connected carriers. No determinations have been made and work in this area continues.

Priority Access. The Funding and Regulatory Working Group (FRWG) began meeting in close coordination with the OMNCS to address potential regulatory issues regarding use of enhanced call completion (ECC) features and wireless technology in emergencies or disaster response scenarios. The FRWG and the OMNCS collaborated to develop a Request for Advice letter to the FCC requesting information on whether industry has the authority to provide priority treatment to NS/EP users of the PSN. The FCC is expected to respond to the letter in FY94.

Enhanced Call Completion. The ECC Task Force Final Report, completed in July 1992, identified 23 existing and future capabilities with potential for enhancing the completion of NS/EP calls during periods of stress on the PSN. Based on this report, the ECC Ad Hoc Group:

- ▼ Assisted the OMNCS in developing, conducting, and completing a cost analysis of ECC capabilities, which is published in the "ECC Services Cost/Analysis Report," dated May 14, 1993
- ▼ Worked with standards bodies and Government in gaining final approval of the standard, "Signaling System No. 7 (SS7) High Probability of Completion (HPC) Network Capability" (ANSI T1.631-1993), dated June 28, 1993
- ▼ Met with the FRWG to address priority access issues raised in the ECC Task Force Final Report
- ▼ Assisted the OMNCS in developing the "NCS

Member Agency Telecommunications Enhancement Handbook," dated August 26, 1993, which provides Government with information about ECC

- ▼ Recommended a phased ECC implementation strategy.

The IES disbanded the ECC Ad Hoc Group after its charge was completed in August 1993.

Wireless Services Task Force. Activities of the Wireless Services Task Force included:

- ▼ Working with the Federal Wireless Users Forum in developing a plan of action to identify Government wireless requirements
- ▼ Identifying and assessing solutions that will ensure interoperability of Government NS/EP communications among wireless services, as well as between wireless and nonwireless systems
- ▼ Surveying the current wireless services environment to determine future goals.

These activities were not concluded and will continue during FY94.

Public Switched Network Security

The PSN's vulnerability to computer intruders was first identified in the National Research Council's (NRC) 1989 report, "Growing Vulnerability of the Public Switched Network: Implications for National Security Emergency Preparedness." As a result of this concern, the Chairman, Policy Coordinating Committee for National Security Telecommunications and Information Systems, directed the Manager, NCS, to determine which actions were needed by the Government and industry to address the threat to the PSN from computer intruders. In response, the Manager, NCS, established the GNSS and NSTAC established the NSTF,

through which industry and Government have focused their efforts. The Government's concerns regarding PSN security focus on the unauthorized access to or manipulation of PSN software and data bases that could affect NS/EP telecommunication users. Specifically, this means intrusions that could result in denial or interruption of service to NS/EP users or in the extraction of sensitive data from network elements. The efforts of the NSTF have been taken over by the NSSC. Senior industry and Government executives continue to place a high priority on mitigating this problem.

The activities in network security have been concentrated in the information exchange and security standards areas. In 1991, the GNSS and NSTF formed separate but closely coordinated Government and NSTAC NSIE groups, respectively. The NSIE groups provide a forum for identification and exchange of issues involving attacks on, and vulnerabilities of, network software and data bases affecting NS/EP telecommunications. The NSIE groups have met approximately every 2 months to exchange information regarding network intrusions and to assess the vulnerability of the PSN to computer intruders. The NSIE groups also sponsored two meetings for subject matter experts from the NSIE member organizations to discuss the security of digital cross-connect systems and packet switched networks.

The NSIE groups also recommended changes to the laws relating to computer crimes because these laws do not provide a sufficiently strong deterrent to computer intruders that invade or damage computer systems supporting the telecommunications infrastructure. The NSIE's recommendation was approved by the GNSS and was sent by the Manager, NCS, to the Assistant to the President for National Security Affairs on September 14, 1993. In May 1993, the NSTAC also approved the NSIE's recommendation. The recommendation will be included in the NSTAC Chairman's report to the President.

In FY92, the NSTAC established the NSSOG to establish and prioritize industry objectives for network security standards and to work with the standards community to provide guidance and motivation to

develop and accept industrywide standards. NIST has been designated as the Government's focal point for the NSSOG. The NSSOG's activities focused on defining the scope of its efforts and planning a strategy to accomplish its purpose.

In support of the network security process, the OMNCS fostered improvements in the security of the Nation's telecommunications infrastructure. These improvements include an assessment of the threat to the PSN by computer intruders, an R&D project to develop a computer software tool to analyze PSN software vulnerabilities, and a program to collect and analyze PSN software incident and vulnerability data.

NS/EP Telecommunication Plans And Architecture

The OMNCS coordinates with member organizations to formulate telecommunication plans, programs, and policies to enhance national telecommunications in a crisis or emergency. Planning must be coordinated with other Federal telecommunication planning activities to take advantage of rapidly emerging technologies that enhance the interoperability of telecommunication systems and networks. The OMNCS also works closely with industry to enhance the PSN in support of national security leadership and economic well-being. The results of coordinated planning functions and activities are used to develop an NS/EP telecommunications Target Architecture and NCS Baseline Activities.

As an integral part of NS/EP planning, the planning process provides a context for the refinement of key planning elements, the NLP, and other NCS baseline programs. It entails requirements collection and analyses; identifying risks to telecommunications; assessing current capabilities; assessing technology and developing strategy; network optimization based on quantitative analysis and performance modeling; communications network design and specification; and implementation planning. Exhibit 2-4 depicts the revised NS/EP Telecommunications Planning Process.

NS/EP TELECOMMUNICATIONS PLANNING PROCESS

The revised NS/EP telecommunications planning process provides a framework that focuses on two key planning elements: a Shortfalls Assessment and a National Initiatives, with appendices for NLP Funding, NCS Baseline Activities, and a Target Architecture. This NS/EP Telecommunications Planning Process establishes an NS/EP telecommunications planning mechanism that facilitates the use of Federal Government, commercial/private sector, and State/local government activities and capabilities. The process includes the formulation, documentation, review, and member organization consideration of the key planning elements listed below. The COP approved forwarding the revised planning process to the EOP through the Executive Agent, NCS.

Shortfalls Assessment. The Shortfalls Assessment element identifies, and places in priority order, national shortfalls in current capabilities that inhibit or preclude the satisfaction of NS/EP telecommunication requirements.

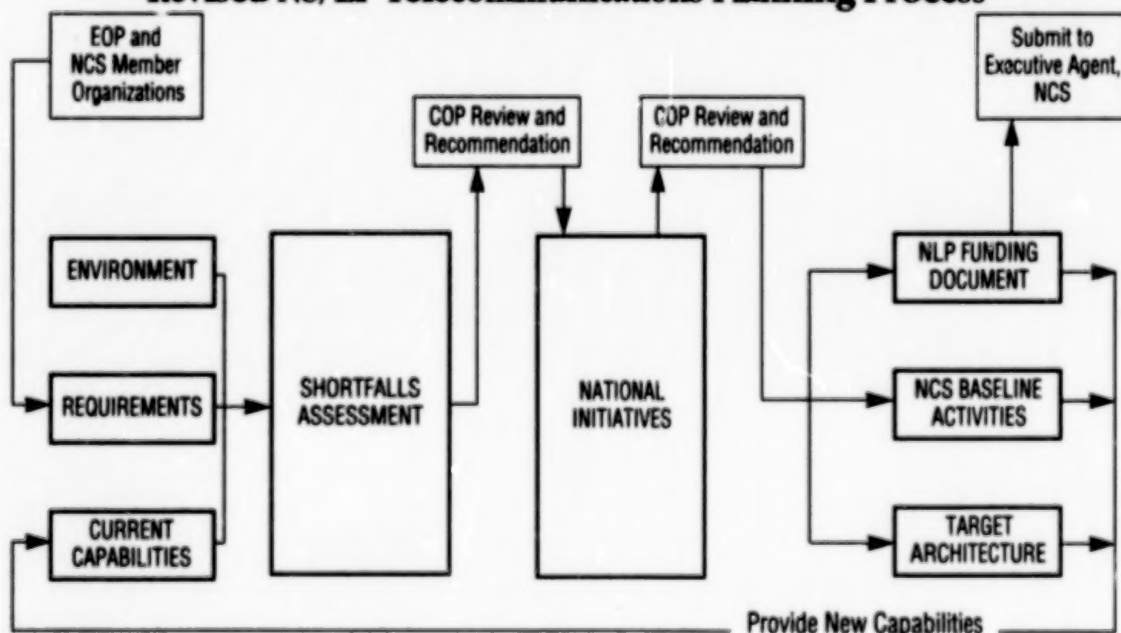
National Initiatives. The National Initiatives element describes proposed national level initiatives for the mitigation of the identified shortfalls and the enhancement of NS/EP telecommunication capabilities, and includes the following as appendices:

NLP Funding. The NLP Funding element specifies the NS/EP telecommunication programs that benefit multiple Federal organizations and that will be undertaken within the NCS structure. The NLP Funding element provides for these programs' funding and implementation, and serves as the principal mechanism for near-term interagency action in support of NS/EP telecommunication objectives.

NCS Baseline Activities. The NCS Baseline Activities element describes the scope and implementation of national initiatives that are to be undertaken by the Manager, NCS, or individual NCS member organizations, or both, and are not included in the NLP Funding.

EXHIBIT 2-4

Revised NS/EP Telecommunications Planning Process



Target Architecture. The Target Architecture describes the structure of NS/EP telecommunication resources and capabilities necessary to satisfy approved functional requirements, and provides a framework for the design, evaluation, and integration of NS/EP telecommunication initiatives. The NS/EP target architecture provides a context for the development and implementation of augmentations and enhancements to existing and emerging telecommunication assets (commercial, Government, and privately owned networks), which form the foundation for NS/EP telecommunications target architecture planning.

The planning process addresses the overall structure of NS/EP telecommunication capabilities and resources to support NS/EP user needs and provides a foundation for the design, evaluation, and integration of national level NS/EP initiatives consistent with the evolving needs of NS/EP users. The planning process guides the evolution of NS/EP telecommunications toward a more survivable and enduring national telecommunications infrastructure.

Accomplishments for NS/EP plans and target architecture this year were:

- ▼ Assisting member organizations in updating their NS/EP telecommunication requirements and user needs
- ▼ Continually updating the NS/EP requirements data base to reflect industry changes, such as area code splits
- ▼ Preparing an FY93 status briefing on essential emergency functions (EEF) and NS/EP telecommunication requirements
- ▼ Developing the Candidate Initiatives Report through close cooperation and coordination with NCS member organizations
- ▼ Identifying and characterizing the broad spectrum of threats to telecommunication resources
- ▼ Utilizing a specifically modified version of the American National Standards Institute (ANSI) surviv-

ability framework to assess current networks and future technologies

- ▼ Developing an Information System Architecture to study the various system standards and identify potential interoperability concerns
- ▼ Addressing the implications to NS/EP telecommunications of emerging broadband applications, products, and services
- ▼ Developing a target architecture that incorporates open system standards, commercial off-the-shelf products and services, and the most promising technologies to protect the network from a broader spectrum of risks
- ▼ Developing, coordinating, and delivering the FY95 NLP to the EOP for approval
- ▼ Revising and updating, under the guidance of NCS Vision 21 MFA I, the NS/EP Telecommunications Planning Process to improve the effectiveness of the process and streamline NCS member consideration
- ▼ Addressing the National Telecommunications Infrastructure in conjunction with the NII and supporting NCS Vision 21 MFA VI, NII, in developing a role for the NCS
- ▼ Developing and coordinating the FY93 NCS Annual Report.

National Level NS/EP Telecommunications Program

The NLP is coordinated with the NCS member organizations and requires significant Government resources for its preimplementation, implementation, and recurring costs. The programs encompassed by the NLP are designed to provide a robust and survivable voice band emergency telecommunications capability, and are expected to result in the significant nationwide enhancement of existing PSN services. These services, as directed by E.O. 12472, are designed to be responsive to the NS/EP needs of the President, Federal departments and agencies, and other entities, under all circumstances including crisis, emergency, attack, recovery, and reconstitution.

Before awarding the Government Emergency Telecommunications Service (GETS) contracts, the Deputy Manager, NCS, directed a review of the entire NLP and its relationship to current world conditions to include the changing threat, economic environment, and technology. The NLP review included an analysis, assessment, and evaluation of the GETS, Commercial Network Survivability (CNS), and Commercial SATCOM Interconnectivity (CSI) programs.

The review analyzed and assessed all NLP program components against classified and unclassified network failure to determine the selection of NS/EP telecommunication program components that provided the maximum benefit to the departments and agencies within the NCS structure. The OMNCS evaluated the cost effectiveness of each program component and its value to the NLP. As a result of the review process the following actions occurred.

- ▼ The Survivable Signaling Network (SSN) contract, under the GETS program, was terminated.
- ▼ The CSI program removed from service one inter-operable telemetry, tracking, and control facility and eight fixed earth stations.
- ▼ The CNS program removed selected carrier interconnects from service.

The GETS program is a PSN-based service that is positioned to evolve with the PSN, thereby taking advantage of and encompassing new emerging technologies such as the Advanced Intelligent Network (AIN). The CNS and CSI programs were revised to enhance services under the cellular and transportable earth terminal efforts, respectively.

The FY95 NLP was forwarded to the EOP, through the Executive Agent, on May 6, 1993. It identifies three integrated national level NS/EP telecommunication programs: the GETS program, the CNS program, and the CSI program. It also identifies the funding and implementation requirements for these programs.

NS/EP TELECOMMUNICATIONS NETWORK PERFORMANCE SUPPORTING ANALYSIS

The OMNCS assesses telecommunications network performance each year to provide analyses that support the NLP, the NS/EP Telecommunications Planning Process, and the Target Architecture. Each year, the OMNCS analyzes the PSN, which includes the networks of the interexchange carriers (IEC) and the local exchange carriers (LEC), to quantify the effects of various threats to NS/EP telecommunications and to confirm the enhanced performance offered by the NCS NLP programs. OMNCS activities included developing the FY95 NLP Supporting Analysis, PSN threat assessments, natural disaster damage modeling and assessment, and cost-effective telecommunications model development.

- ▼ The FY95 NLP Supporting Analysis improved previous analyses by expanding to address several additional significant issues. NCS efforts in the area of telecommunications reliance in times of stress focused on the evaluation of the benefits associated with implementing the NLP in terms of logical and physical connectivity, and periods of network congestion. The ability to quantify a variety of threats, not only nuclear, to NS/EP telecommunications on both a national and regional basis was

also included in the evaluation. The development of a regional vulnerability model that evaluated the effect of various regional threats on the PSN, coupled with the ability to measure the detrimental effect of network congestion on the telecommunications infrastructure, clearly demonstrated that the NCS is recognizing and adapting to a changing threat environment. The network congestion modeling methodology was codeveloped by the NCS Offices of Technology and Standards and Plans and Programs.

- ▼ In the assessment of threats to NS/EP telecommunications, the NLP Supporting Analysis has continued to identify the changing threat environment. The "Hostile Threat to NS/EP Telecommunications" analysis documented hostile intelligence collection, terrorism, sabotage, unconventional warfare, and nuclear (strategic and limited) threats. As a continuation of last year's efforts, the "Non-hostile Threat Analysis" included the natural and technological disaster threat as well as the electronic intrusion threat to NS/EP telecommunications. Recent efforts have focused on improving the current capabilities of the OMNCS to predict the impact of natural disasters on NS/EP telecommunications. In particular, the precision of the Earthquake Damage Assessment Model has been improved. The "Electronic Intrusion Threat to NS/EP telecommunications" analysis provided a baseline description of the threat posed by members of the computer underground to the PSN and its associated telecommunications. This task was accomplished through a combined effort between the NCS Offices of the Joint Secretariat and Plans and Programs.

- ▼ The Natural Disaster Damage Assessment (NDDA) effort is developing a methodology to determine the expected loss of telecommunications functionality from natural hazards. This methodology consists of two approaches: the first consists of developing fragility models for telecommunication systems and facilities, and the second incorporates

probabilistic modeling approaches. The first approach, in coordination with the NCS Office of the Joint Secretariat and the National Science Foundation (NSF), incorporates a detailed analytical systems approach, functional block logic methods, and point estimate methods. The second approach, in coordination with the NCS Offices of Technology and Standards and Emergency Preparedness, combines experiential data collected from FCC outage reports with extreme value analysis and Bayesian statistics to determine the risk of loss of telecommunications due to natural hazards. Current efforts include synthesizing the two methods into a cost-effective NS/EP natural hazard telecommunications model that will achieve the precision necessary in high-risk areas and ascertain a general Continental United States-wide (CONUS-wide) risk assessment of the loss of NS/EP telecommunications due to natural hazards.

- ▼ In the area of methodology development, significant achievements included the development of cost-effective modeling methodologies that assist other NCS tasks. Specifically, modeling methodologies were developed to evaluate the performance of SS7 networks and measure the contribution of wireless communications.

GOVERNMENT EMERGENCY TELECOMMUNICATIONS SERVICE

The GETS architecture provides NS/EP users a dependable, cost-effective, and flexible switched voice and voice-band data communication service that will be available under a broad range of circumstances including natural or man-made disasters. The GETS architecture is designed to take advantage of new and emerging technologies available within the PSN, such as ECC features. This benefit allows greater flexibility for NS/EP enhancements and augmentations, and enables GETS to be more responsive to the changing NS/EP environment. The GETS acquisition approach calls for a phased implementation of services allowing for additional capabilities over time as budgets permit and an

early, limited implementation of GETS services. Exhibit 2-5 shows the capabilities provided by GETS when full operational capability (FOC) is attained. The GETS program encompasses the following:

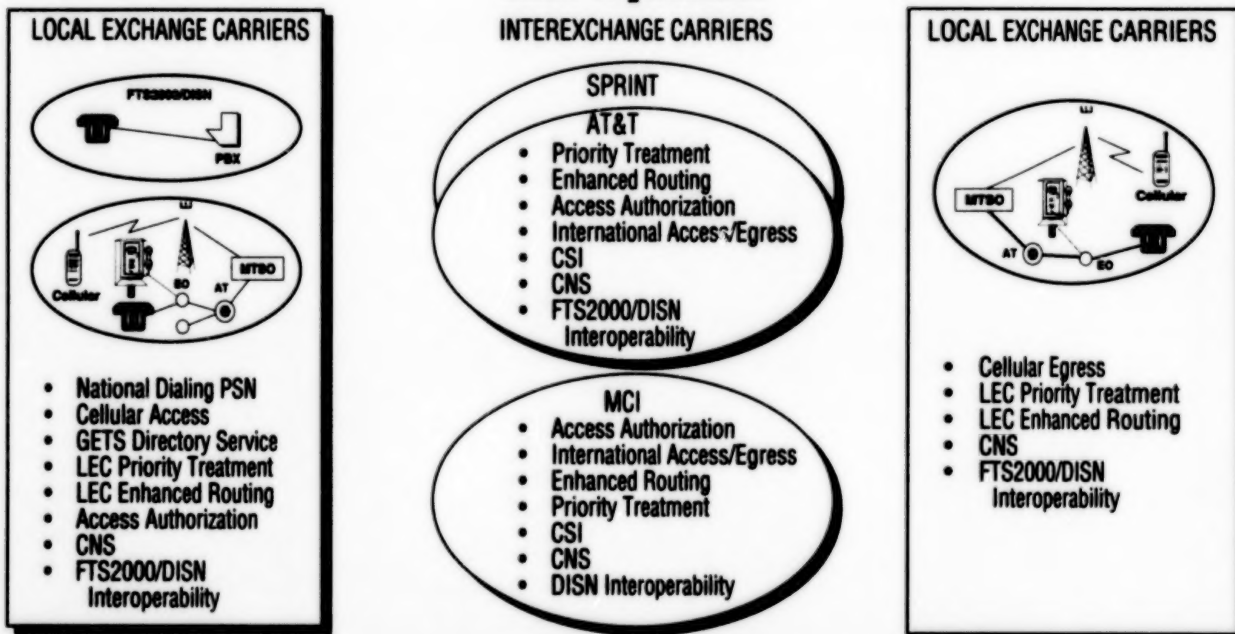
- ▼ GETS will use existing PSN features and services to provide a nationwide capability for switched clear voice, encrypted secure voice, facsimile, and voice-band data communications.
- ▼ GETS calls will be afforded priority treatment and enhanced routing in the PSN, as well as CNS and CSI augmentations. The GETS program will utilize Enhanced-Real Time Network Routing (E-RTNR) in the AT&T network with planned service in August

1994. E-RTNR will have a more flexible call routing capability that provides real-time routing, as well as the highest priority to NS/EP traffic within the AT&T commercial network.

- ▼ GETS will be available nationwide, and will provide international access and egress through a special GETS access number. User authentication will be provided using personal identification numbers (PIN).

During the past year, the acquisition of enhanced services for NS/EP users was advanced through the auspices of the GETS program. The following milestones were reached:

EXHIBIT 2-5 GETS Capabilities



Access Number (1+710-NCS-GETS)

Transport Via One of Three IECs

Egress Using PSN Routing to End User

LEGEND

EO	End Office
AT	Access Tandem
MTSO	Mobile Telephone Switching Office
PBX	Private Branch Exchange

- ▼ The GETS "Organization and Operations (O&O) Plan" was coordinated and issued March 31, 1993.
- ▼ The Government released a Request for Proposal (RFP) for the competitive acquisition of a GETS integration contractor in October 1992. The Government awarded the GETS integration contract to GTE in July 1993. The integration contractor will initially obtain LEC enhancements and services, and will eventually assume full integration and management responsibilities for the IEC services in 1996. GTE is available to support NCS member organizations in studying and implementing ECC services as an option. The member organizations may possibly be responsible for funding this support.
- ▼ The final Robust Non-Hierarchical Routing (RNHR) annual redesign was completed in July 1993.
- ▼ Contracts were signed by AT&T, MCI, and Sprint to begin implementation of GETS services within their respective networks. A GETS limited capability (LC) is planned for September 1994 and an initial operating capability (IOC) is scheduled for October 1, 1995.
- ▼ ANSI approved and published an American national standard, ANSI T1.631-1993, that establishes an HPC network capability to support priority treatment of NS/EP traffic. The integration contractor will study the implementation of the HPC parameter in the LEC networks.
- ▼ The GETS/FTS2000 Interoperability Working Group defined the interoperability requirements for GETS at LC. FTS2000 access to GETS will initially be available with the subsequent addition of transport and egress of GETS calls using FTS2000. The Defense Information System Network (DISN) will also be used to support access, transport, and egress of GETS calls.

The following GETS activities continued:

- ▼ The OMNCS continued coordination with the North American Numbering Plan Administrator, Bell

Communications Research, the Cellular Telecommunications Industry Association (CTIA), and the United States Telephone Association for opening the GETS nationwide 710 numbering plan area code in all commercial carrier networks including cellular.

- ▼ Three IEC's continued to support the Government by providing data on their networks and technical approaches for processing NS/EP traffic.

COMMERCIAL NETWORK SURVIVABILITY

The CNS program enhances the short-haul connectivity of commercial and Government telecommunication networks in support of NS/EP telecommunication needs. CNS enhancements improve the diversity of NS/EP access and egress connectivity through the integration of emerging communications technologies. Network enhancements obtained under the CNS program will be integrated with GETS as it is implemented.

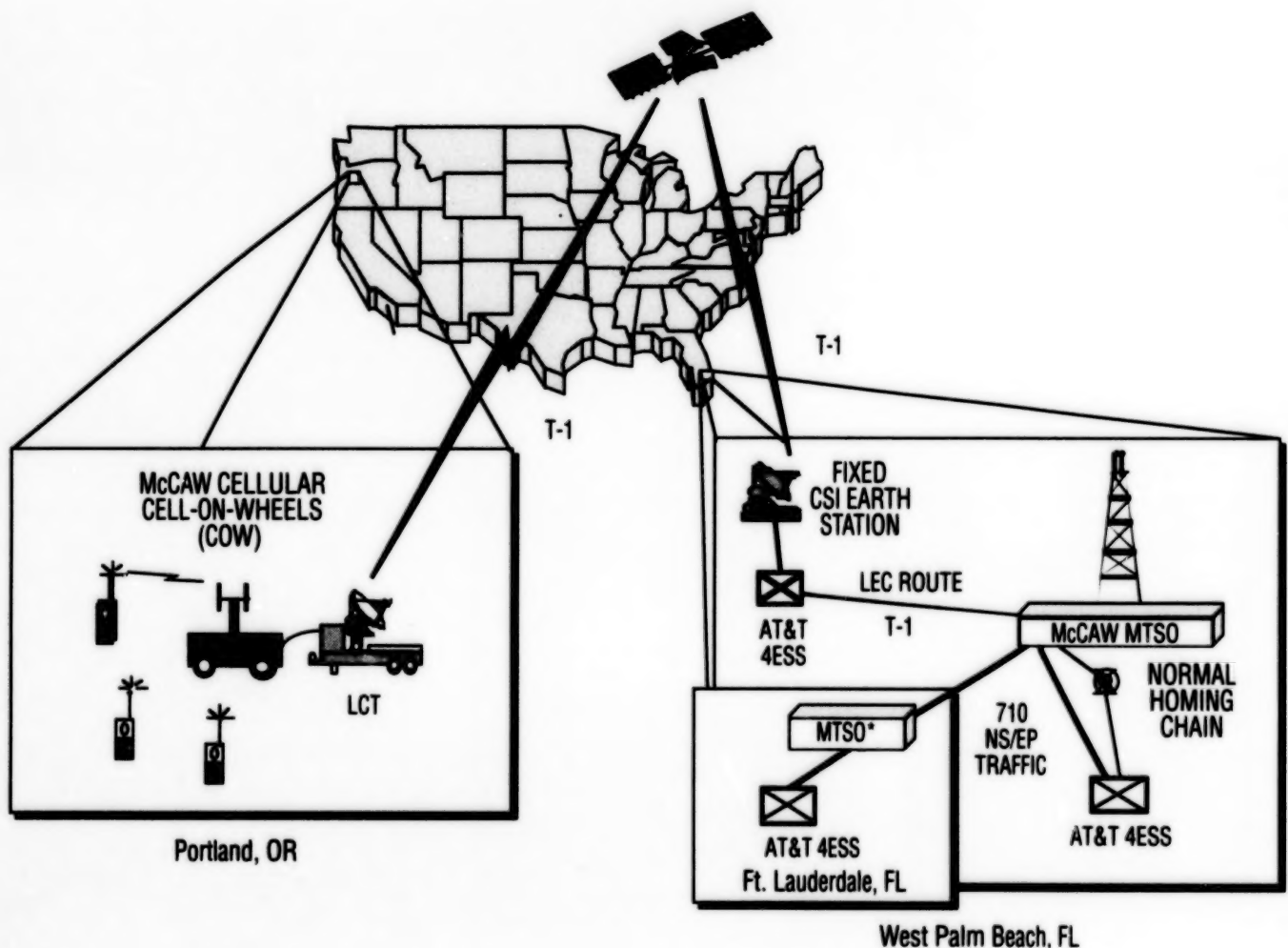
The following major CNS activities were conducted:

- ▼ Performed a cost/benefit analysis on all 17 carrier interconnects. This analysis used the zonal threat model to analyze local access and transport area (LATA) connectivity based on varying degrees of PSN damage. Based on this analysis, nine carrier interconnects were terminated.
- ▼ Initiated a task to design a new network enhancement that will be interoperable with GETS and provide diverse access and egress to NS/EP users. The purpose of this task is to ensure that all CNS services are interoperable with GETS.
- ▼ Continued the effort to develop a unified nationwide cellular priority treatment to support critical emergency responses. The OMNCS is working to identify requirements for cellular priority treatment and is coordinating the participation of potential users and the cellular industry in cellular priority activities.
- ▼ Conducted a cellular proof-of-concept test during

the week of June 28, 1993, in conjunction with the CSI annual test and exercise. This test involved connecting a cell-on-wheels to a distant Mobile Telephone Switching Office (MTSO) via a CSI low-cost terminal satellite link. The concept of an

MTSO acting as a gateway was validated in this test. Also validated were the use of the 710 numbering plan area code, the ability to identify NS/EP traffic, and the alternate routing of NS/EP traffic to the PSN. Exhibit 2-6 depicts this exercise.

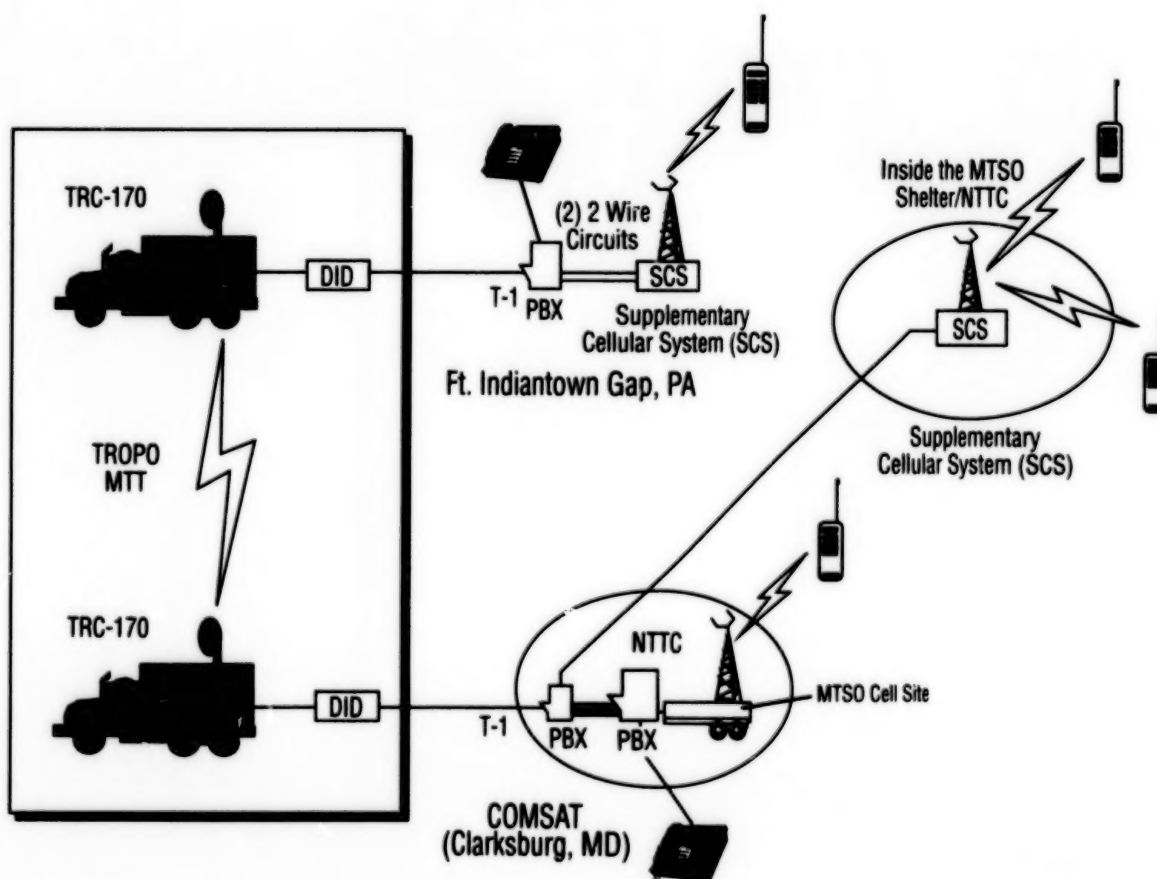
EXHIBIT 2-6
CNS Cellular Proof of Concept



The Mobile/Transportable Telecommunications (MTT) component of the CNS program seeks to restore and extend PSN links for NS/EP telecommunications using military/tactical communications resources, primarily AN/TRC-170 and 173 tactical radio equipment. The major activities involving MTT were:

▼ Used MTT to support the National Transportable Telecommunications Capability (NTTC) Somalia Predeployment Test. MTT assets were used to connect a remote three-channel cell site and switching configuration with the NTTC system. Exhibit 2-7 shows the MTT configuration that was tested.

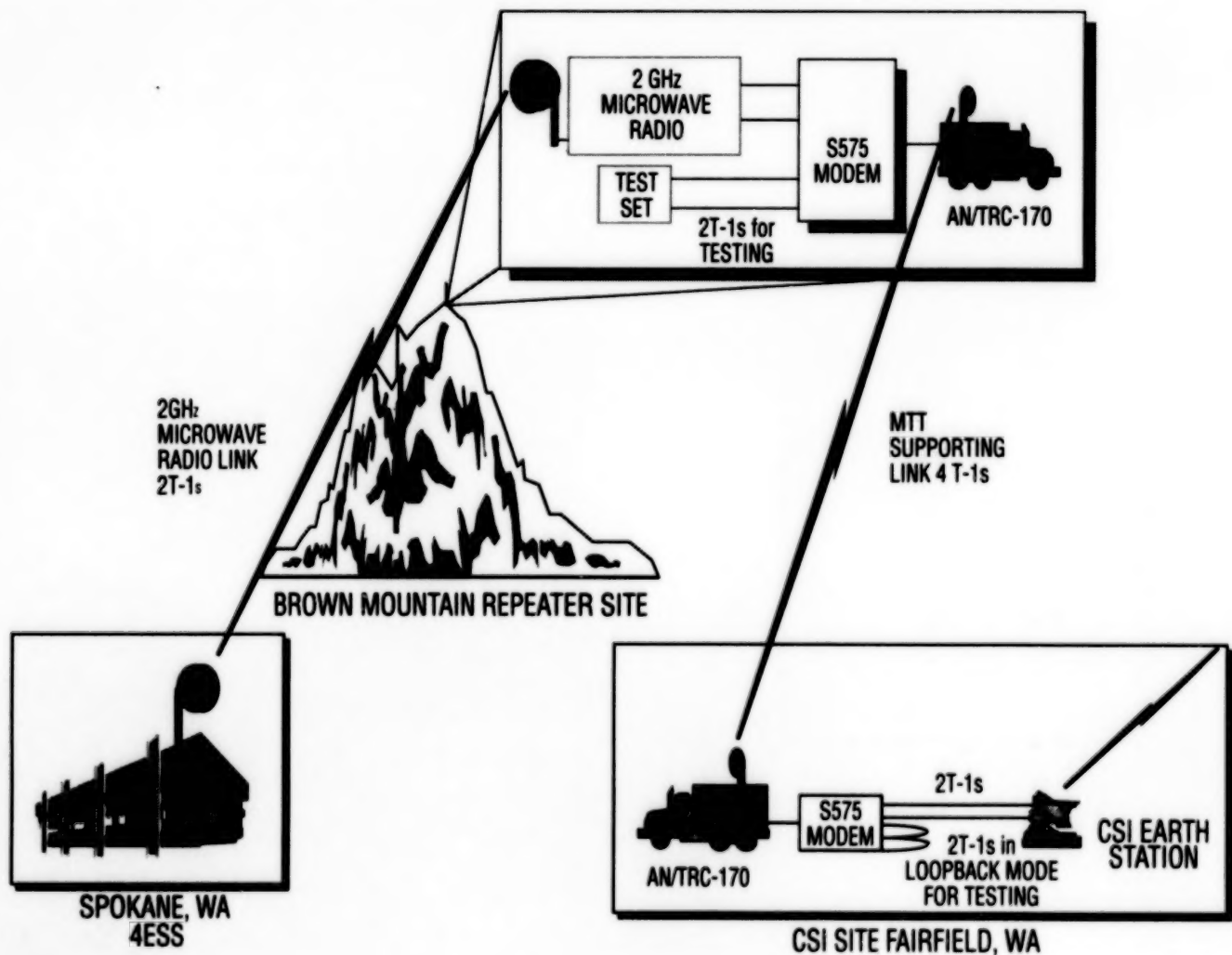
EXHIBIT 2-7
MTT Configuration



▼ Conducted MTT/CSI tail circuit reconstitution testing in conjunction with the CSI annual test and exercise. This test validated the ability of MTT assets to effectively reconstitute a CSI tail circuit. This test also provided insight to the logistical issues involved with interfacing MTT assets with carrier switches. Exhibit 2-8 provides more detail on the test configuration.

▼ Assessed the ability of newer military/tactical communications technologies to support the MTT mission. Initial investigations of both the ground mobile forces tactical satellite and Mobile Subscriber Equipment indicate that this equipment is capable of supporting the MTT mission effectively.

EXHIBIT 2-8 MTT/CSI Test Configuration

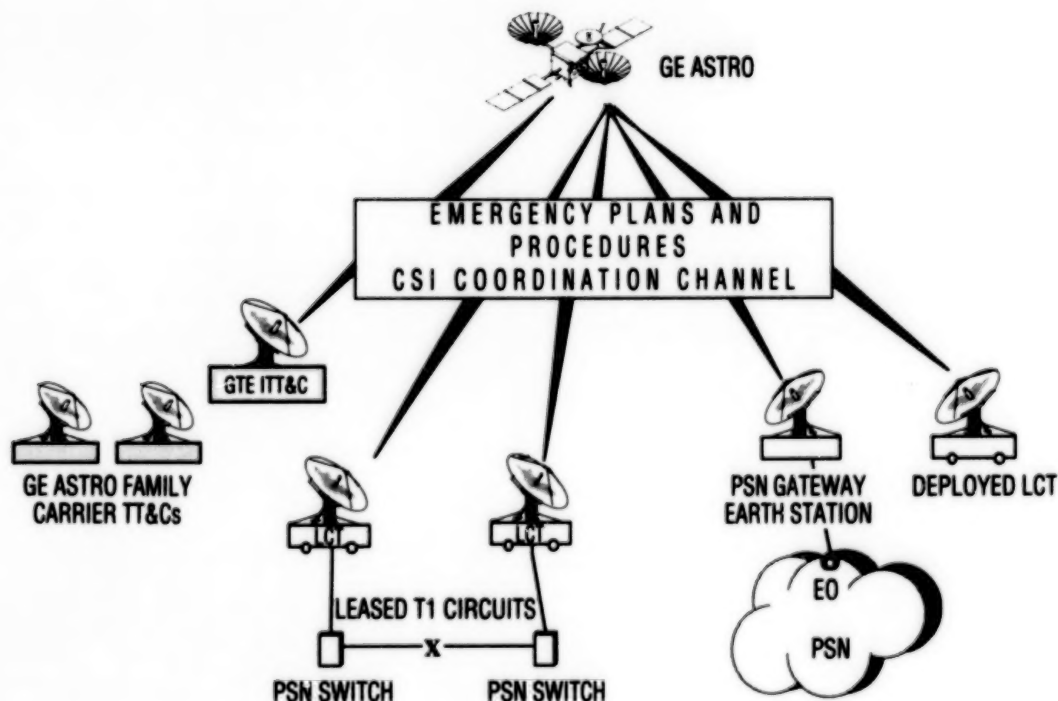


COMMERCIAL SATCOM INTERCONNECTIVITY

As shown in Exhibit 2-9, the CSI program uses commercial satellite assets to enhance NS/EP telecommunication capabilities during all stress levels. With the changing threat environment, the CSI program is continuing to adjust assets to emphasize its natural disaster role. At the end of FY93, the CSI program consisted of

12 communications earth stations, 11 of which were accepted, and an Interoperable Telemetry, Tracking, and Control (ITT&C) facility to recover the three axis-stabilized family of satellites. CSI earth stations provide T-1 connectivity using standard CSI modems, and are linked by terrestrial tail circuits to PSN switches. Seven of these earth stations have a transportable capability to support communications restoral in remote locations.

EXHIBIT 2-9
CSI Network Elements



The following activities were performed using commercial satellite assets:

- ▼ The Manager, NCS, successfully conducted the fifth annual test and exercise of the CSI network. Several proof-of-concept tests were successfully demonstrated, including an MTT tail circuit restoral, CSI terminal deployment, CSI integration with cellular carriers, and a pre-GETS dialing plan capability. See Exhibit 2-10 for CSI exercise activities.
- ▼ With the changing threat environment, the CSI program was restructured to be more responsive to natural disasters. Contract deployment statements were modified to include responses to natural disasters other than those specified in Section 706. In addition, a CSI earth station was modified to provide a remote PSN access capability to support deployed or disconnected NS/EP users.
- ▼ With the new emphasis on natural disaster recovery, the CSI network is evolving to support a more transportable rapid response requirement. Due to this change in emphasis, several fixed earth stations and an ITT&C were cancelled.
- ▼ Future architecture studies are being conducted to enhance CSI capabilities and determine the direction of CSI. The results of these studies will provide recommendations for the next generation of CSI sites.

EXHIBIT 2-10 CSI Exercise Activities



National Telecommunications Management

NATIONAL COORDINATING CENTER FOR TELECOMMUNICATIONS

The NCC assists the NCS member organizations in initiating, coordinating, restoring, and reconstituting NS/EP telecommunication services or facilities under the all-hazards concept.

The following companies are members of the NCC: AT&T; Bellcore; COMSAT; GTE; ITT Metro Media; Martin Marietta; McCaw Cellular Communications; MCI; MFS Telecom, Inc., (a new industry member); Pacific Telecommunications, Inc.; USTA; and Sprint. GE American Communications was acquired by Martin Marietta during this period. Government staff changes included the addition of a representative from the Central Intelligence Agency (CIA), and the departure of the representative from the Department of Transportation/United States Coast Guard.

The NCC reviewed its mission and function in light of recent geopolitical changes. This in-depth analysis included a word-by-word review of the NCC Charter. While minor changes to the charter were noted for the record, no matters of major substance were identified. The mission and function of the NCC are deemed to be completely consistent with the revised strategic plan of the NCS Office of Emergency Preparedness (NE), and they place the NCC in a position to be totally responsive to the critical communications requirements of the Federal Government across the entire spectrum of crises or emergencies.

The President declared 37 major disasters and 18 emergency declarations this year. They involved NCS regional support to FEMA and the Federal response organizations in 37 States. Record-breaking flooding occurred throughout the upper Mississippi and Missouri valleys, causing nine States to be declared major disaster areas by the President. In total, thousands of square miles were inundated by flooding that destroyed thousands of miles of levee systems and

caused the loss of thousands of homes and businesses. The full impact of this flooding on the agricultural community will not be assessed for several years. The Federal Government has dedicated at least \$5.7 billion to disaster relief in the devastated flood area.

The impact of this record-breaking flooding on the PSN was relatively minor. Service to individual homes and businesses was disrupted until waters receded and equipment could be dried out or replaced. The major United States carriers, however, were able to use "work arounds" to solve most communications problems and keep vital communications intact.

The NCC also continued to provide international assistance to United States operations in support of the United Nations and other national interests. Multiple requests for services in support of operation PROVIDE PROMISE (former Yugoslavia) and operation PROVIDE COMFORT (Turkey) were processed by the NCC. The NCC also assisted with support to United States/United Nations operations PROVIDE HOPE and UNSOM II (Somalia). The NCC continues to monitor the situation in Saudi Arabia and Kuwait (operation SOUTHERN WATCH).

NATIONAL TELECOMMUNICATIONS MANAGEMENT STRUCTURE

The NTMS provides a comprehensive, survivable, and enduring management capability for initiating, coordinating, restoring, and reconstituting the telecommunication resources of the Nation. The NTMS plays a crucial role within the NCS in ensuring that the functions performed by the NCC can continue throughout any contingency. The operational elements of the NTMS consist of three levels of telecommunication management teams composed of experts from both industry and Government, taking policy direction and guidance from the Director, OSTP. Exhibit 2-11 shows the operational elements of the NTMS. Currently, 48 Operating Centers (OC's) from industry and Government have been identified. Exhibit 2-12 shows the current NTMS OC locations and participating organizations.

EXHIBIT 2-11
Operational Elements of the NTMS

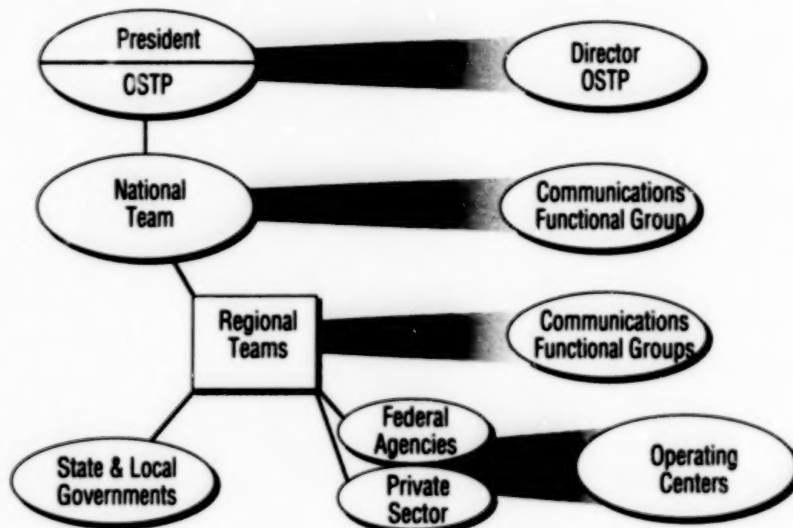


EXHIBIT 2-12
Current NTMS Operating Centers



190-032

In June 1993, the Director, OSTP tasked the OMNCS to continue with the implementation of the NTMS and to "take steps necessary, within current budgetary guidance, to enhance the NTMS to ensure a flexible, integrated response capability to manage the Nation's telecommunication assets across the full spectrum of domestic and national security emergencies." The OMNCS formed a task force to examine issues and actions associated with enhancing the NTMS to provide a seamless, all-hazard emergency telecommunications management capability.

NTMS performed the following activities:

- ▼ Continued training of National Emergency Management Team and Regional Emergency Management Team Communications Functional Groups (CFG)
- ▼ Produced five NTMS training videos
- ▼ Published and distributed two NTMS newsletters
- ▼ Validated the NTMS Battle Creek, Michigan; Thomasville, Georgia; and Denver, Colorado CFG's, completing the regional validation of NTMS.

National Telecommunications Coordinating Network. The National Telecommunications Coordinating Network (NTCN) is the primary telecommunications capability designed to support the operations and functions of the NTMS. The NTCN supports the NTMS by providing communications connectivity for the exchange of minimum essential telecommunications management information between NTMS elements.

The NTCN relies on existing multimedia telecommunication systems and capabilities that can be readily accessed to support the NTMS mission. HF radios deployed by the NTMS Program Office can serve in a contingency as a means of communications if other systems or network segments are disrupted or inaccessible.

NTCN activities included:

- ▼ Completing site surveys at 13 NTMS OC's for the installation of HF radios and associated antennas
- ▼ Installing HF radios at 20 OC locations
- ▼ Conducting multiple NTCN communication tests
- ▼ Acquiring 42 HF radio frequencies dedicated to the NTCN network
- ▼ Conducting an ALE interoperability test on the Harris RF-3200E radio system
- ▼ Developing the NTMS OC training curriculum
- ▼ Training OC personnel at 11 sites.

NS/EP INFORMATION RESOURCE MANAGEMENT

The following activities were performed:

- ▼ A 5-year "Information Resource Management (IRM) Strategic Options Plan" was produced to guide the technology insertion program within the OMNCS.
- ▼ An IRM Resource Center was established to maximize use of state-of-the-art IRM technology.
- ▼ A quarterly IRM newsletter was initiated to keep the staff abreast of the rapidly changing IRM environment within the OMNCS.
- ▼ Voice mail was successfully introduced and is used by 80 percent of the OMNCS staff.
- ▼ All Office Automation and Mission Disk Operating System-based (DOS-based) equipment was successfully transferred to the DOS 5.0 operating system.
- ▼ The introduction of Microsoft Windows technology and a corresponding 286/486 CPU replacement program were finalized.
- ▼ An analysis for the insertion of electronic imaging was completed.
- ▼ Maintenance and procurement of automated data

processing resources for the operational integrity of the OMNCS was continued.

- ▼ Mission-specific application support as amplified in each project's accomplishments was continued.
- ▼ The Telecommunications Emergency Decision Support System was terminated to conserve resources in a radically different global environment.

NS/EP TELECOMMUNICATIONS SERVICE PRIORITY SYSTEM

The TSP System, which authorizes the priority provisioning and restoration of NS/EP telecommunication services, reached full operating capability in March 1993. The TSP System has now fully replaced the old restoration priority system. The TSP data base contains 18,292 active TSP restoration priorities. One hundred forty-five TSP provisioning priorities were assigned.

The TSP Program Office and the TSP Oversight Committee focused on implementing lessons learned from Hurricane Andrew. The TSP Program Office also focused on continuing education efforts targeting the TSP user community. In addition, as a result of the numerous TSP briefings and articles, requests for TSP assignments have been received from foreign governments and State and local government bodies, as well as from the banking and medical communities. The requests are indicative of the broadening scope of the TSP System.

The following points summarize the primary activity in these areas during the year:

- ▼ Significant input was provided for the development of the NCS Emergency Response Training Seminar given in Atlanta, Georgia, in May 1993. The TSP System was a major component of this training seminar. The training was developed in response to the recognized need for better coordination between State and Federal telecommunication emergency response efforts and the need for a better understanding of the Federal Response Plan.
- ▼ TSP educational briefings were provided to various organizations including the National Emergency

Numbers Association (NENA) and the Associated Public-Safety Communications Officers (APCO). Additionally, briefings were given at several industry-sponsored large customer user forums that cater to regional emergency response organizations (e.g., police, hospitals, fire, and rescue).

- ▼ A special TSP System edition of the NCS publication "NS/EP Telecom News" was widely distributed. Additionally, TSP informational articles were placed in the February 1993 edition of "NENA News" and the Spring 1993 edition of the National Association of State Telecommunications Directors' publication, "Gateway."
- ▼ State Governors were given the ability to delegate NS/EP invocation authority to a maximum of five senior State officials. The NCS Committee of Principals voted in February 1992 to approve the recommended changes to NCSM 3-1-1, "Telecommunications Service Priority (TSP) System for National Security Emergency Preparedness (NSEP) Service User Manual," allowing State Governors to delegate invocation authority. State Governors' previous inability to delegate invocation authority was one of the 10 concerns of State and local governments that spurred the development of the "TSP Program Office Strategic Plan," completed in September 1992. Of the 10 issues addressed in the Strategic Plan, 9 were closed during FY93.
- ▼ A methodology was developed to help evaluate the need for TSP in a 911 emergency communications system. This methodology was further expanded to apply to general emergency communication systems. The State of California and GTE tested and validated the methodology in February 1993.
- ▼ A standardized report for tracking TSP provisioning priorities during an emergency response effort is being developed. During the Hurricane Andrew response, providing timely and accurate information on the status of TSP assignments was difficult. This standardized report will allow direct access by TSP users and vendors to update TSP information

on-line. Utilizing one report will result in consistent and accurate information on TSP service status.

Additional TSP efforts pertained to the following:

- ▼ The TSP Program Office addressed reconciliation of TSP services for the first time. The reconciliation process compares TSP information from users, vendors, and the TSP Program Office to ensure that accurate and consistent records are maintained for TSP services.
- ▼ The TSP Program Office also addressed revalidation of TSP services. The revalidation process ensures that TSP users review their TSP services to justify the continued necessity of the TSP assignment. Each TSP assignment is valid for 3 years and must be revalidated after that time.
- ▼ The TSP Program Office continued enhancements to the TSP Management Information System to facilitate more effective processing of TSP information. These enhancements primarily facilitate the electronic exchange of TSP information, including the electronic submission and processing of TSP request forms (SF315).
- ▼ The TSP Program Office reviewed criteria established by the Federal Reserve Board for the sponsorship of Federal Reserve Banks and large-value money transfer systems. Additionally, the TSP Program Office reviewed policies and procedures developed by the Department of Health and Human Services (DHHS) for its sponsorship of TSP requests. A number of hospitals have already approached DHHS seeking sponsorship.

SHARED RESOURCES HIGH FREQUENCY RADIO PROGRAM

The SHARES HF Radio Program provides an emergency backup communications capability for NCS departments and agencies in support of their NS/EP requirements through the use of existing HF radio resources. This NCS initiative continued to grow to the current level of 1,008 HF radio stations operated by 39 Federal and federally affiliated organizations (see Exhibit 2-13).

The SHARES capability is always available to Federal emergency management and operations staff to support NS/EP requirements, whether intra- or inter-agency. As long as emergency criteria defined in SHARES procedures are met, SHARES members will assist in processing emergency message traffic. While SHARES participants made substantial contributions to disaster mitigation during FY92, there were no occurrences in FY93 that called for SHARES assistance.

Expanding the awareness of SHARES capabilities was an important activity of the SHARES Working Group. SHARES staff members were invited to more than two dozen NCS department and agency conferences and seminars to discuss the SHARES program and its capabilities. The SHARES Information Bulletin was enlarged, and the content redesigned to be more responsive to the needs and interests of the many SHARES participants.

The four exercises involved more SHARES participants than ever before. The exercises were designed to elicit information useful in the analysis of technical operating and message handling procedures. Exercise play was deliberately less structured and, as a result, more realistic. The three formal SHARES exercises were conducted on November 17 to 18, 1992; April 20, 1993; and August 31, 1993. SHARES also supported Exercise Response '93, conducted on June 7-10, 1993.

Statistically, total exercise participation results were:

- ▼ 32 Federal or federally affiliated entities
- ▼ 837 HF radio operators
- ▼ 239 HF radio stations
- ▼ 919 messages handled
- ▼ 97 percent average message completion rate.

During the NCS 30th anniversary celebration in late August 1993, a radio "open house" was held to offer SHARES participants an opportunity to test and validate SHARES procedures at their convenience. Although the week-long event was only an informal exercise, 476 messages from 369 stations were handled by the NCC, demonstrating continued interest in and

Exhibit 2-13 Shares HF Radio Stations



SHARES HF RADIO PROGRAM - Participation

Organization	Stations	ERP's ²	Organization	Stations	ERP's ²	Organization	Stations	ERP's ²	Organization	Stations	ERP's ²
Agriculture	10	4	NRC	0	3	HHS	3	2	HQ, DOT	0	3
BELLCORE	16	3	USTRanscom	15	1	Interior	8	3	FAA	45	7
NTIA	1	8	Marine Corps	0	1	US NCCS	0	1	FHWA	60	12
HQ, USAF	0	1	USN-MC Mars	135	5	HQ, DOJ	1	3	MARAD	1	2
AF Mars	30	1	1st Army	0	1	DEA	2	2	OET	11	1
AF Reserve	2	3	2nd U.S. Army	1	1	FBI	58	6	USCG	7	6
AF Reserve HS	0	1	7th SIG CMD	0	1	INS	12	2	USCS	8	4
AFCC	0	2	USAISC	34	8	DNA	0	1	Red Cross	0	2
Space CMD	0	1	Forces CMD	0	1	OIRM	0	2	OSD	0	3
CAP	215	2	EPA	2	2	MITRE	1	6	NSA	0	2
DLA	14	2	White House	0	3	OMB	0	1	HQ, USA	0	1
AMC	0	2	CIA	0	3	NSC	0	2	Army Mars	100	2
DMA	13	2	State EOC's	0	4	NASA	9	20	Army HS	0	1
Energy	11	7	HQ, Treasury	0	1	DISA	0	1	State	0	3
DOMS	1	1	FRB	0	3	NTCN	14	1	OSTP	0	2
Nat Guard	76	3	WHCA	0	1	NCC	1	1	Veterans Affairs	7	46
HQ, USN	0	1	USPS	0	3	OMNCS	0	24			
NCTC	0	1	FCC	15	11	JIEO	0	3			
NSWC	1	1	FEMA	18	14	OJCS	0	3			
USACE	42	14	GSA	8	12	USIA	0	2			
									Total Workbooks	1008	322

1. Workbook Distribution 2. ERP: Emergency Response Personnel

support for the SHARES program. Stations from all 50 States representing 37 Federal and federally affiliated organizations participated.

JOINT TELECOMMUNICATIONS RESOURCES BOARD

Dr. John H. Gibbons took oaths of office for both Assistant to the President for Science and Technology, and Director, OSTP, on February 2, 1993. In these capacities, Dr. Gibbons is charged with providing access to authoritative information and expert scientific, engineering, and technological advice to the President, Federal officials, and Congress. He is also charged with coordinating science and technology policy throughout the Federal Government.

The Joint Telecommunications Resources Board (JTRB) supports the Director, OSTP, in carrying out his nonwartime emergency responsibilities. Several mem-

bers of the JTRB have yet to be appointed and others are transitioning to their new positions. As a result, the JTRB has not been convened thus far during the Clinton administration. In June 1993, Director Gibbons, on behalf of the new administration, requested that the OMNCS do the following:

- ▼ Continue implementation of the NTMS
- ▼ Revise the FRP to make the OSTP the primary agency for ESF #2
- ▼ Execute this function on behalf of the OSTP
- ▼ Revise the OSTP National Plan for Telecommunications Support in Non-Wartime Emergencies
- ▼ Continue to perform secretariat functions in support of the JTRB.

FEDERAL RESPONSE PLAN

The FRP was approved in April 1992 and was fully tested by the hurricanes and storms during the fall of 1992. In March 1993, FEMA formed an interdepartmental Federal Response Planning Task Force to review and revise the implementing procedures for the FRP necessary to achieve operational readiness for Federal response during the 1993 hurricane season. The task force accomplished its mission of recommending solutions to critical, short-term issues impeding full operational readiness for Federal response. FEMA continues to work on developing legislation to further enhance Federal readiness in responding to catastrophic events.

OPERATIONAL READINESS AND EXERCISE SUPPORT

The NCS and NCC successfully participated in the following exercises and training events.

Exercise Response '93. This exercise, sponsored by FEMA, was designed to test the plans and procedures of the FRP; FEMA's Region VIII appendices to the FRP; and Federal, State, and local coordination mechanisms and procedures. The primary focus of NCS involvement during the exercise was to examine the ability of ESF #2 to support Federal, State, and local telecommunications responses to recovery efforts. Exercise Response '93 included the active participation of Federal departments and agencies as well as national and regional representatives. NCS member organizations provided players at: Arlington, Virginia, in the NCC; Washington, DC, through the Emergency Support Team at the FEMA Emergency Information Coordination Center; Denver, Colorado, at the FEMA Region VIII Regional Operations Center; Camp Williams, Utah, at the Disaster Field Office; and Salt Lake City, Utah, at the Utah State Emergency operations center.

Telecommunications Emergency Response Training Seminar. The OMNCS, in coordination with GSA, the Department of Defense, and FEMA, is conducting a series of Telecommunications Emergency

Response Training Seminars. The objective of the seminars is to provide telecommunications emergency response personnel at all levels with an understanding of the FRP and how each level of response would coordinate response efforts. A pilot seminar was conducted May 17 to 18 in Atlanta, Georgia. More than 80 emergency response personnel participated representing Federal and State Governments, and industry. Based on the positive response from Atlanta, additional seminars will be conducted over the next year. A seminar for Region V also was held September 29 to 30 in Chicago.

OMNCS AUGMENTEE PROGRAM

The development of the augmentee program, which was formalized in 1988, continued. This program is composed of the National Defense Executive Reserve (NDER) and the United States Department of the Army's Individual Mobilization Augmentee (IMA) Program. The augmentees supplement existing staff within the OMNCS and at regional locations during national emergencies or crises.

National Defense Executive Reserve. The NDER's are highly qualified business executives and other civilian personnel who can be activated during times of national security emergencies. They are assigned and trained to serve in key positions at the national and regional levels. The NCS unit has 34 members assigned; NDER's have extensive telecommunications or emergency management expertise. During the year, the NCS unit had 34 members who participated in several Manager, NCS-sponsored training activities.

Individual Mobilization Augmentees. The IMA program provides United States Army Officer Reservist personnel to augment the staff of the OMNCS during emergencies or crises. The OMNCS is authorized 49 IMA Officer positions. OMNCS IMA's were tasked to assist the NCS/Defense Information Systems Agency operations center during sensitive phases of the Somalia relief effort. A major milestone was realized

when the program was expanded to include peacetime disasters. Since then, IMA's have participated in the OMNCS, FEMA, and GSA-sponsored Federal Emergency Communications Coordinator training sessions in Atlanta, Georgia, and Chicago, Illinois. In June 1993, 12 IMA's participated in Exercise Response '93, a FEMA-sponsored earthquake exercise. The exercise was conducted in Salt Lake City, Utah, and was designed to test Federal, State, and local readiness, preparedness, and response mechanisms. Another milestone was reached this year when the OMNCS IMA's were determined, by the GSA/NCS regional communications coordinators, to be trained and fully capable of performing emergency communications functions in the response/recovery phases of an emergency. During several disasters, IMA's assisted in establishing Disaster Field Offices in Texas, Oklahoma, Florida, Oregon, and Washington.

Technology And Standards

The NCS Office of Technology and Standards is responsible for performing analyses, assessing technology, and preparing plans, procedures, and standards that help ensure reliable, survivable NS/EP communications. In practical terms, this means that the analyses, technology, and standards relate to the interoperability of NS/EP communications with the NII.

TECHNOLOGY

WIRELESS SERVICES

The first and second Federal Wireless Users Forum workshops were sponsored by the Wireless Services Program Office and NIST. The workshops addressed the following objectives:

- ▼ Educating Federal users and identifying their needs
- ▼ Facilitating liaison among users, standards organizations, manufacturers, and service providers
- ▼ Supporting interoperability among wireless systems, and wireless systems interoperability with wireline systems.

Specific work areas identified for future workshops encompassed:

- ▼ Spectrum management, such as frequency coordination, access, and signaling
- ▼ Security and how to address associated privacy and legal issues
- ▼ New work areas as appropriate, such as new technology developments.

Security Measures for Wireless Services.

Security threats often exist in many places along a communications path. Active threats (e.g., intrusion) typically cause alteration in the information contained in a communications system. Passive threats (e.g., eavesdropping) do not result in any modification to the information contained in a wireless transmission.

The following conclusions were reached based on an analysis of the security measures offered by various commercial wireless services:

- ▼ Security mechanisms in most commercially available wireless communication services do not provide adequate security or privacy protection against threats.
- ▼ Industry and Government need to address NS/EP security requirements for wireless communications.

Telecommunications Industry Dependence on Foreign Sources.

An analysis of United States telecommunications industry dependence on foreign components, assemblies, subassemblies, and raw materials used to manufacture Class 5 telecommunication switches was performed. This analysis stems from a recommendation by the Joint Industry/Government Telecommunications Industry Mobilization (TIM) Group, and serves two key purposes: to update a 1987 analysis, and to outline areas for potential future NCS efforts with respect to the subject of foreign source dependency. The present analysis illustrates factors affecting foreign dependence vulnerabilities (see Exhibit 2-14) and concludes that:

- ▼ The level of dependence on foreign sources for semiconductors to manufacture high-end (e.g., Class 5 switch systems) telecommunications equipment has diminished. United States manufacturers have the capability to manufacture all types of microelectronic devices. However, the Pacific Rim countries continue to supply a considerable share of the large-capacity memory devices and micro-controllers.
- ▼ In most cases, United States companies have the capability to manufacture all foreign source-dependent components, but these same companies remain uncompetitive with respect to quantity of supply.
- ▼ Some raw material items remain dependent upon the supply of petrochemicals from outside the United States.

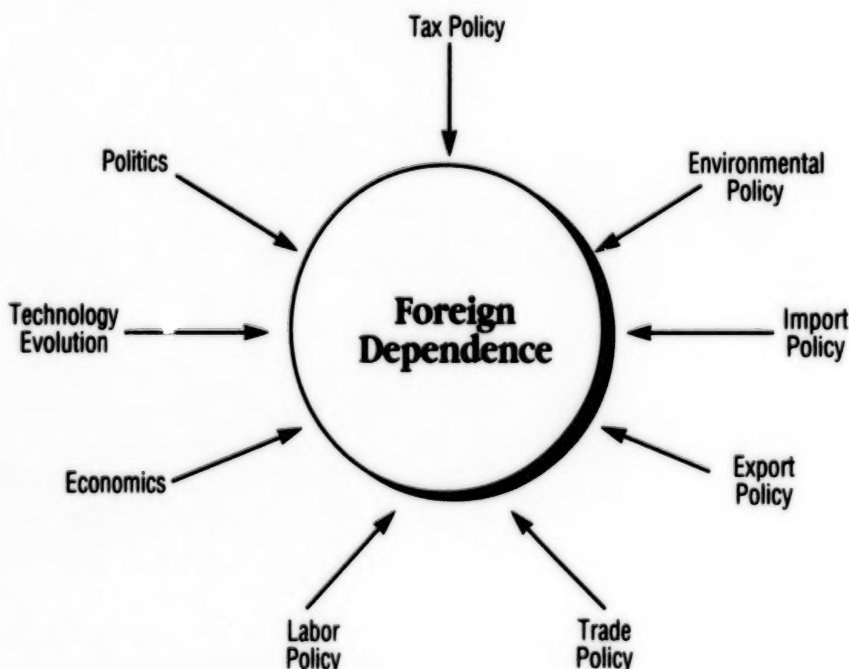
- ▼ Telecommunication companies conduct business in a global environment. United States suppliers pursue partnerships and agreements with foreign entities and, therefore, complicate measures of foreign source dependency.

Complementary Metal Oxide Semiconductor (CMOS) Modeling.

CMOS technology is used extensively in electronic equipment. The extremely low power consumption and moderately fast switching capabilities of CMOS's underscore key qualities of this technology. One vulnerability of CMOS's, however, is radiation damage. This vulnerability was addressed in a special effort.

A Capacitance-Voltage (C-V) model suitable for highly nonideal Metal Oxide Semiconductor Field Effect Transistors (MOSFET) was developed. This

EXHIBIT 2-14
Factors Affecting Foreign Dependence Vulnerabilities



model predicts CMOS performance when a large number of defects caused by gamma radiation occur. The MOSFET C-V characteristics were related to standard measurements of CMOS performance that include threshold voltages. This CMOS effort provides the capability to mitigate radiation damage in CMOS circuitry with appropriate changes to CMOS threshold voltages.

1.55 Micrometer Fiber Data Links. Radiation sensitivity in erbium-doped fibers was studied. The results of these studies were analyzed, and the stoichiometry required to harden erbium-doped fiber amplifiers was identified. A detailed study of the radiation-induced 1.3 micrometer attenuation in optical fibers was performed to develop an explanation for the power-law dependence of loss upon dose. During the study, an unexpected result occurred — the capability to make detailed predictions of the recovery curve by just knowing the power law exponent and irradiation time. The time constant of the recovery was found to depend only on these two parameters, independent of the order of the kinetics. Analysis provides the capability to accurately extrapolate results to field environments for extension to 1.55 micrometer dispersion-shifted optical fibers. These results form the basis of a comprehensive data base of optical fiber radiation sensitivity at 1.55 micrometers under simulated prompt gamma and fallout conditions.

AT&T Systems Electromagnetic Pulse (EMP)

Analyses. Analyses were completed on AT&T systems previously exposed to simulated EMP fields. Analyses indicated that these systems, while failing to register physical damage, remain susceptible to upset from the effects of high-altitude electromagnetic pulse (HEMP). The systems included:

- ▼ AT&T Series G Fiber Optical System
- ▼ AT&T Digital Access and Cross-Connect System (DACS) II, III, and IV
- ▼ Fast Automatic Restoration (FASTAR)
- ▼ Integrated Access Terminal
- ▼ Network Multiplexers Dual DS-3 Multiplexers (DDM) 1000 and DDM 2000

- ▼ Subscriber Loop Carrier (SLC) System 5.

Analysis of Network Level EMP Effects. An EMP analysis was performed on the PSN toll-level networks utilizing the Traffic Analysis by Method of Iteration (TAMI) model. Some conclusions were:

- ▼ Six dB versus 10 dB Series G repeater shielding: For EMP damage, an increase of shielding from 6 dB to 10 dB significantly improves connectivity in the AT&T network and in the networks of LEC's. For EMP upset, the increase in shielding does not make a significant difference due to the very long transmission paths in AT&T. These paths typically depend on the survival of 60 or more repeaters. Even with 10 dB shielding, a high probability of failure of at least one repeater exists.
- ▼ Plain Old Telephone Service (POTS) versus NS/EP: Under EMP upset, connectivity remains too low. However, in the case of EMP damage, connectivity remains good. A significant amount of congestion affects POTS traffic, but not NS/EP traffic. Furthermore, NS/EP connectivity significantly improves over POTS if the network utilizes RTNR.
- ▼ EMP damage versus upset: When EMP damage occurs (i.e., transistor burnout), network connectivity still remains high. Network blockage will result from network congestion factors only, not EMP damage. In contrast, when EMP upset occurs (i.e., software upset), network connectivity diminishes or becomes nonexistent. Network blockage will result directly from network connectivity loss, which is a direct effect of EMP upset.
- ▼ When both EMP damage and EMP upset occur, connectivity decreases as EMP stress increases.

High Altitude Electromagnetic Pulse Effects on Local Area Networks (LAN). An analysis was performed on the response of a distributed LAN operating in a wide area network (WAN) configuration under a HEMP environment. The analysis used data from previous simulated EMP tests conducted for the

OMNCS. A summary of the analysis indicates:

- ▼ LAN/WAN operations were consistently upset when exposed to simulated EMP.
- ▼ Detailed procedures to recover LAN/WAN operations after EMP upset cannot be established.
- ▼ The restoration of a facility or network that requires EMP survivability depends upon the availability of hardware to withstand, or be protected from, the HEMP environment. In addition, restoration depends upon the capability to communicate with remote facility or network locations without interruption.

Earthquake Modeling. An analysis of potential probabilistic modeling approaches to forecast degradation in network performance by earthquakes was performed. Probit and logit response models, extreme value techniques, and Bayesian statistical techniques were examined. Bayesian statistical techniques proved most viable for modeling network earthquake effects. These techniques proved viable because of the subjective assessments of uncertainty, the statistical inference with limited data, and the dependence on expert opinion.

Facsimile. An assessment of enhanced facsimile services was performed. The assessment evaluated:

- ▼ Effectiveness, reliability, and speed of optical character recognition (OCR) for interpreting store-and-forward instructions
- ▼ Effectiveness, reliability, and speed of OCR for converting facsimiles to character-based documents
- ▼ Performance differences between character and binary encoded methods.

High Definition Television (HDTV). An analysis of the HDTV standardization process was performed; the analysis centered on:

- ▼ National and international activities that directly relate to HDTV standardization

- ▼ Potential applications of HDTV in the Federal Government
- ▼ Interoperability of HDTV.

STANDARDS

FEDERAL STANDARDS

Development of Federal standards to meet specific Government NS/EP telecommunications requirements continued under the auspices of the Federal Telecommunication Standards Program (FTSP). The Federal Telecommunication Standards Committee (FTSC) of the FTSP recommended for approval and publication by GSA, a number of Federal Standards (FED STD). These standards were designated:

- ▼ FED-STD 1045A — High Frequency (HF) Radio Automatic Link Establishment (ALE)
- ▼ FED-STD 1046 Section 1 — HF Radio Automatic Networking Basic Networking-ALE Controller
- ▼ FED-STD 1049 Section 1 — HF Radio Automatic Operation in Stressed Environment Linking Protection MIL-STD-187-110
- ▼ FED-STD 1055 — Interoperability Requirements for Meteor Burst Communications Between Conventional Master and Remote Stations
- ▼ FED-STD 1056 — Interoperability Requirements for Encryption of Meteor Burst Communications
- ▼ FED-STD 1057 — Interoperability Requirements for Meteor Burst Communications Between Conventional Internetwork Gateway Master Stations.

The FTSC formally recommended for approval and publication by NIST, one Federal Information Processing Standard (FIPS): FIPS 178 — Video Coder/Decoder for Audiovisual Service at 56 to 1.92 kb/s International Telegraph and Telephone Consultative Committee (CCITT) H.261, MIL-STD 188-131 (FED-STD 1080).

In addition, the FTSC approved for public, industry, and Government comments, FED-STD 1094 — Administrative Standard for Telecommunications Infrastructure of Commercial Buildings. The FTSC also initiated preparations to convene a new subcommittee that will revise FED-STD 1037B — Glossary of Telecommunications Terms. These preparations centered on a formal request for comments, and research of software choices for the editorial process. Additional information on Federal standards appears in the Appendix to Technology and Standards, Exhibit 2-24, "Status of Federal Standards."

FTSC SUBCOMMITTEES.

Digital Telecommunications Quality. A proposed list of Federal quality of service standards for voice, video, and data communications was produced. A cooperative test program was defined for quality of service measurement instruments that were originally developed by the Institute for Telecommunication Sciences (ITS). The program will be used by ITS to improve measurement effectiveness and accuracy.

Fiber Optics. Two Telecommunications Industry Association (TIA)/Electronics Industry Association (EIA) 472 series fiber specifications were developed and recommended for FIPS publication:

- ▼ TIA/EIA-472CAAA — Detail Specification for All Dielectric (Construction 1) Fiber Optic Communications Cable for Indoor Plenum Use
- ▼ TIA/EIA-472DAAA — Detail Specification for All Dielectric Fiber Optic Communications Cable for Outside Plant Use.

Both of these specifications adopt, by reference, the multimode optical fiber performance specifications of FIPS PUB 159. Two TIA/EIA standards in the building cable family were revised and updated:

- ▼ TIA/EIA-568—1991-Building Cabling
- ▼ TIA/EIA-569—1990-Pathways and Spaces.

High Frequency Radio. HF radio activities that centered on ALE included:

- ▼ A complete set of ALE functional calling tones was made available on a compact disc (CD), to assist with implementation of FED-STD 1045 ALE protocols.
- ▼ Work was performed on a simulator, based on implementation of commercially available plug-in digital signal processing boards, to support testing of FED-STD's 1046 and 1047.
- ▼ Work was initiated, with DISA participation, on an operational test and evaluation of HF ALE for automatic digital network (AUTODIN) entry from the AN/TSC-120 communications van.

Other HF activities included:

- ▼ Performing an assessment of the current state-of-the-art technology in digital imagery transmission over narrowband, noisy, and fading HF radio channels
- ▼ Working on a portable wideband HF channel simulator to facilitate testing at manufacturers' plants and field sites
- ▼ Performing evaluation and testing on various HF radio and packet radio modems, including ancillary modems, in support of FED-STD 1049
- ▼ Analyzing new multimedia transmission systems using advanced waveforms and code combining protocols in support of more efficient digital communications networks
- ▼ Examining additional broadband HF antenna for use in SHARES.

Interoperability/Acquisition Standards Data Base. The proliferation of Federal and commercial telecommunication standards complicates the acquisition process for Federal personnel when they attempt to apply these standards to Federal purchasing. Therefore, the FTSC created an ad hoc subcommittee

(Interoperability/Acquisition Standards Data Base) to develop a user friendly mechanism to assist Federal acquisition personnel with standards applications. An automated on-line information resource was created and activated. This resource provides Federal agencies with the ability to identify telecommunication standards that apply to their specific technical requirements. In addition, the resource facilitates statement of work (SOW) preparations during typical Federal telecommunication acquisitions.

Land Mobile Radio (LMR). Assistance was provided to the Associated Public Safety Communications Officers Project 25 (APCO-25) and the TIA. Efforts were directed towards the development of new digital LMR automatic trunked systems standards. Other assistance included providing expertise to develop a new trunking standard (MIL-STD-188-348) for DoD LMR systems. When completely developed, the new standard will incorporate work from previously proposed draft FED-STD 1044 (25 kHz wideband trunked analog system), and evolving TIA LMR standards (12.5 kHz narrowband trunked digital system). LMR encryption efforts centered on development of:

- ▼ Over-the-air capabilities for key initiation
- ▼ Rekeying
- ▼ Centralized network control
- ▼ Network maintenance.

Meteor Burst Communications (MBC). An analysis was performed on the MBC and the advanced MBC (AMBC) techniques. The analysis considered performance and operational capabilities during typical telecommunication information transfers. Some conclusions of the analysis are:

- ▼ AMBC technology opens many new communications possibilities
- ▼ AMBC functions anywhere in the world
- ▼ AMBC possesses many of the advantages of satellite communications, but without the need for satellites.

OTHER FTSP ACTIVITIES

Modifications of FIPS Pubs 147, Group 3 Facsimile Apparatus for Document Transmission in the General Switched Telephone Network, and FIPS PUB 148, Procedures for Document Facsimile Transmission in the General Switched Telephone Network, were initiated to account for recent modifications of international Group 3 facsimile international Recommendations. A commercial standards committee of TIA, TR-29, developed an optional capability (G3-64) for Group 3 facsimile. This option provides for higher transmission speeds (up to 64 kb/s), but still maintains interworking with the current version of Group 3 facsimile machines. Preliminary analysis indicates that this optional capability satisfies Government requirements.

The FTSC provided considerable assistance during the development of key commercial fiber optic standards. These standards included:

- ▼ Z138.2, American Standard for Safe Operation of Optic/Fiber Communications Utilizing Laser Diode and LED Sources
- ▼ EIA/TIA-492AAAA, Detail Specifications 62.5/125mm Multimode Fiber
- ▼ EIA/TIA-492BAAA, Detail Specifications for Single-mode Fiber
- ▼ EIA/TIA-455, Test Procedures for Fiber Optic Fibers, Cables, and Transistors.

COMMERCIAL STANDARDS

Participation in commercial standards development was in national and international standards organizations. Standards participation efforts focused on interoperability and evolving technology for improved NS/EP within applications service areas of:

- ▼ Integrated Services Digital Network (ISDN) and Broadband ISDN (B-ISDN), asynchronous transfer mode (ATM) and synchronous optical network (SONET)
- ▼ Multimedia, e.g., video teleconferencing, imagery

- ▼ Facsimile
- ▼ Telecommunications Management Network (TMN)
- ▼ Universal Personal Telecommunications (UPT)
- ▼ Personal Communications Services
- ▼ Cellular.

NATIONAL STANDARDS

Participation in the development of national commercial standards centered on four key standards organizations. These key national standards organizations include: ANSI, Exchange Carriers Standards Association (ECSA), TIA, and the Institute of Electrical and Electronics Engineers (IEEE). Key standards committees participation of these organizations include: Telecommunications, T1; Information Technology, X3; Facsimile, TR29; Data Communications Network Interface, TR30; Telecom Equipment and Fiber Optics, TR41; Digital Cellular, TR45; and Information Technology, Joint Technical Committee 1 - Technical Advisory Group, JTC1-TAG. Additional information on these organizations and specific subcommittee participation is available in the Appendix to Technology and Standards, Exhibits 2-18 to 2-22.

On June 28, 1993, a significant national standards development effort, with direct NS/EP implications, culminated when ANSI approved and published "Signaling System No. 7 (SS7) High Probability of Completion (HPC) Network Capability" (ANSI T1.631-1993). This standard describes a capability with the following two key functions:

- ▼ A special indicator with call setup signaling that the network carries to identify an NS/EP call.
- ▼ Special marking for each setup message by every network exchange. This increases the probability that a message will be transferred to another exchange during congestion in the signaling network.

INTERNATIONAL STANDARDS

Participation in the development of international commercial standards centered on four key standards organizations. These key international organizations included: the International Telecommunication Union (ITU), the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC), and the Joint Technical Committee 1 (JTC 1). Additional information on the ITU is available in the Appendix to Technology and Standards, Exhibit 2-21. In March 1993, the first World Telecommunications Standardization Conference of the ITU formally approved changes to restructure the ITU. Foremost among the changes was a consolidation of standards activities formerly performed by the CCITT and the International Radio Consultative Committee (CCIR). This consolidation represents a timely response to the integration of wireline and wireless communications. The new ITU structure positions the ITU as a lead telecommunications player within the global economy.

Baseline Mobilization Program

The NCS Baseline Mobilization Program, designed by the OMNCS, implements the recommendations of the Joint Industry/Government Telecommunications Industry Mobilization (TIM) Group. In July 1990, the Assistant to the President for National Security Affairs requested that the Manager, NCS, coordinate with NCS member organizations to implement the specific telecommunication mobilization recommendations of the Joint TIM Group.

In response, the OMNCS developed an implementation approach that includes identification of task responsibilities, a time-phased work plan, and a schedule of status reports. The program will extend over 3 years, with 36 tasks distributed among NCS member organizations. The OMNCS forwarded a report to the NSTAC's IES on the status of the recommendations.

National Transportable Telecommunications Capability

The NTTC is a rapidly deployable, integrated satellite and cellular telecommunications system. NTTC can be used to fulfill the immediate, short-term communications needs of isolated Government NS/EP users (military and civilian) during a wide range of emergency situations. Exhibit 2-15 illustrates the components and connectivity of the NTTC system. Past deployment exercises successfully demonstrated system transportability, operational procedures, and potential applications of this technology in support of contingency requirements. The OMNCS deployed the NTTC system to South Dade County, Florida, to support the communications requirements of the National Disaster Medical System staff during disaster recovery efforts after Hurricane Andrew.

The OMNCS completed a test to demonstrate NTTC capabilities to handle additional cell sites for multiple remote sites and an increased number of users, as shown in Exhibit 2-16. The OMNCS has also

initiated an enhanced NTTC study to analyze various technologies to identify modular and cost/operation effective follow-on systems in support of NS/EP users during and after disasters. A NTTC deployment guide, brochure, and video that describe the procedures for deploying and operating the NTTC system are available through the OMNCS.

Enhanced Call Completion

Many ECC features provide networkwide benefits that affect NS/EP requirements. These features (exemption from network management controls, trunk queuing, and enhanced routing alternatives) are included in the GETS program acquisition. Several ECC user option features, such as improved user access/egress, dual homing/hosting, LEC bypass, and priority dial tone can directly benefit NS/EP users by improving call processing. During the coming years, the OMNCS will continue to assess the value of these ECC features and any new ECC-like services that exhibit the potential to improve NS/EP call processing.

EXHIBIT 2-15
NTTC Program

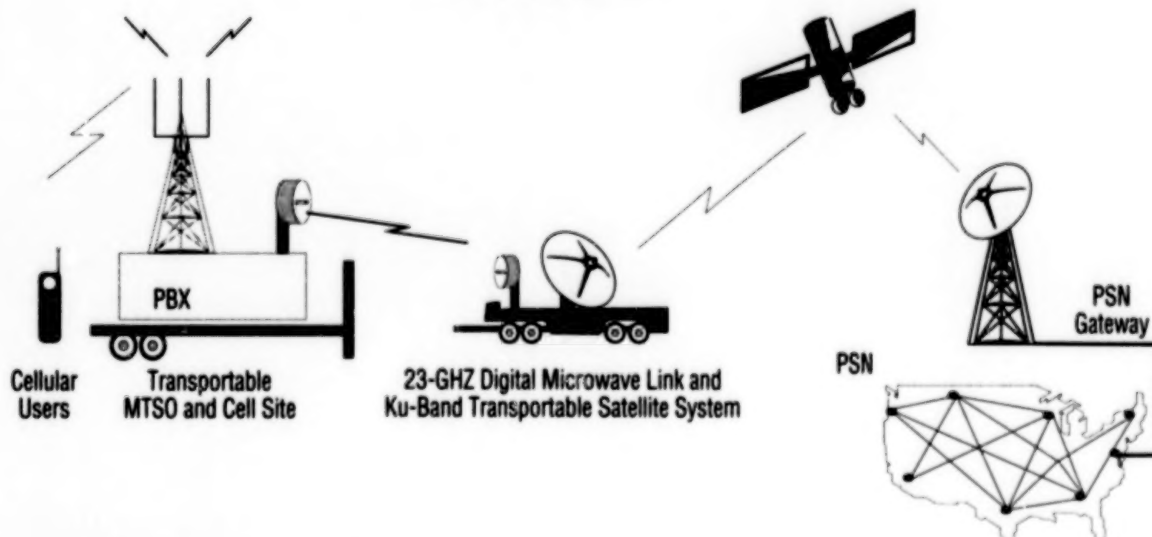
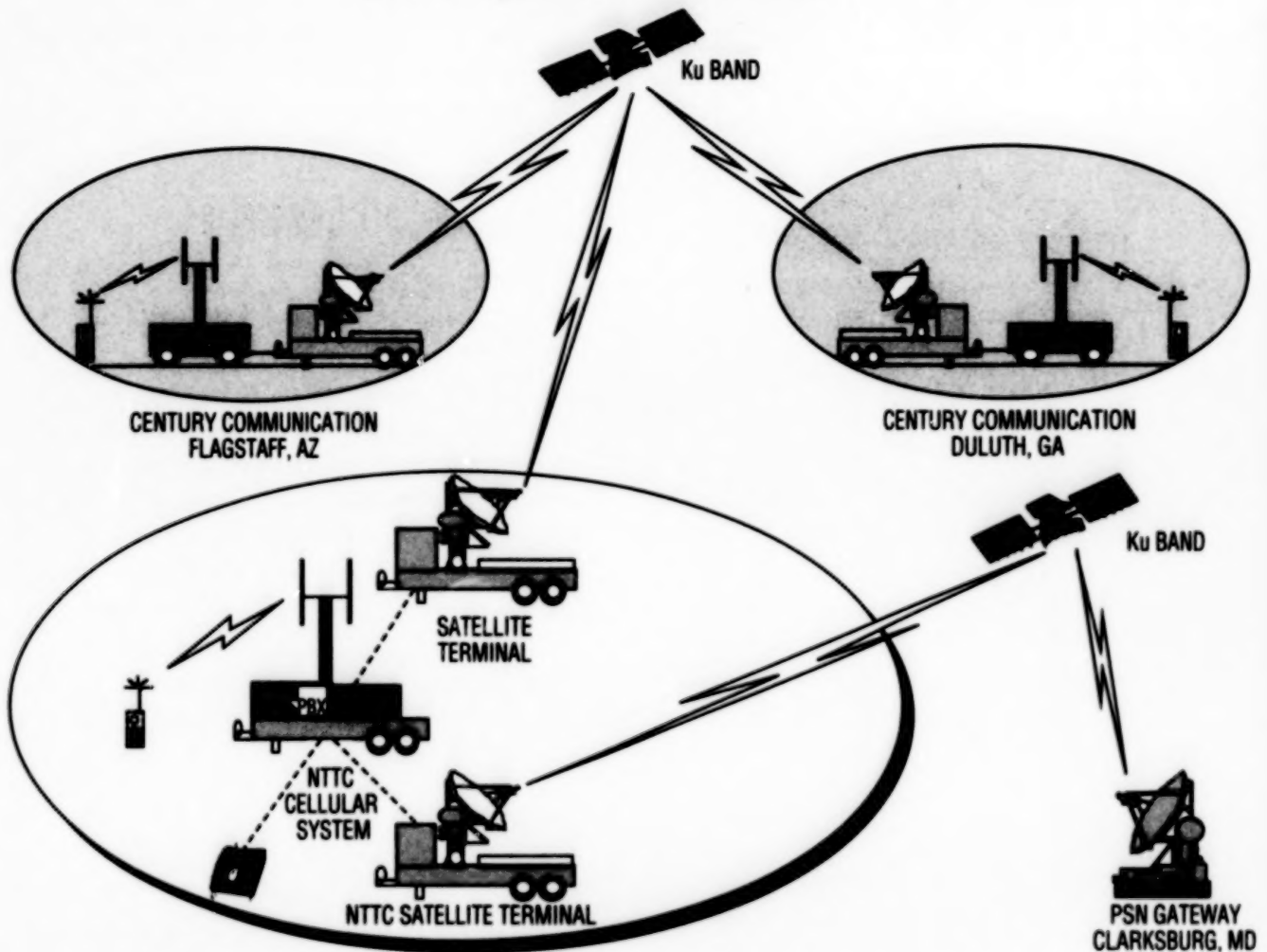


EXHIBIT 2-16 NTTC Capability Demonstration



With the assistance of the ECC Ad Hoc Group (and the ECC Task Force Final Report), NCS member organizations and industry, the OMNCS accomplished the following activities:

- ▼ Completed a cost and benefit analysis of ECC capabilities and published the results in the "ECC Services Cost/Analysis Report," which describes ECC services, relative costs associated with ECC services, and analysis of the benefits and tradeoffs of ECC services.

- ▼ Completed and distributed the "NCS Member Organization Telecommunications Enhancement Handbook," which describes alternative actions NS/EP users can accomplish to ensure communications support for specific missions. The handbook also reviews risks to telecommunications continuity based on PSN vulnerabilities, presents a set of alternative enhancements that users can consider for NS/EP implementation, and compiles current information from a variety of sources regarding NS/EP and ECC services.

- ▼ Became the focal point for ECC services after the IES disbanded the ECC Ad Hoc Group.
- ▼ Completed a case study to determine the availability of ECC features in a LEC and at a specific Government facility within a specific LEC.
- ▼ Ensured that selected ECC services were included in the GETS, CSI, and CNS acquisitions.
- ▼ Briefed a North Atlantic Treaty Organization (NATO) team of rapporteurs about the implications of the ANSI HPC standard and the possibilities of using ECC-like services to improve NATO telecommunications.
- ▼ Completed a demonstration of selected ECC services and features.

Advanced Intelligent Network

The AIN technology is an evolving, service-independent technology now in the early stages of implementation by major telecommunication providers. An AIN architecture can be viewed as an overlay to the PSN. Its elements control and interact with switches to allow for the special handling of calls, which provide many benefits to the NS/EP subscribers. Some of these benefits include enhanced subscriber services to allow users to control their calls and customize services critical for NS/EP telecommunication requirements to provide users with greater freedom and interoperability between different networks that create one seamless network of services.

The AIN Program Office (AIN PO) was established by the OMNCS to lead the Government R&D of intelligent networks in support of NS/EP telecommunications. Through close interaction with industry, the AIN PO acts to influence the direction of AIN implementation to ensure NS/EP requirements are taken into consideration by telecommunication service providers as AIN platforms are deployed. Other AIN PO activities include assessing AIN technology developments,

defining NS/EP requirements, and determining potential NS/EP AIN services.

NS/EP telecommunications are increasingly relying on commercial PSN capabilities. As the PSN evolves toward AIN technology, AIN could play a significant role in the provisioning of NS/EP telecommunication services. The AIN PO plays a crucial role in the identification, development, and demonstration of AIN services that meet NS/EP telecommunications requirements.

Enhanced Satellite Capability

The Enhanced Satellite Capability (ESC) program is designed to participate with industry and Government in assessing and documenting new and experimental communications satellite capabilities and evaluating the applicability of these new technologies to existing and future NS/EP requirements. The project will foster development of new technologies and initiatives and propose architectures to utilize new capabilities to support NS/EP requirements. All of the ESC activities support NSDD-97 and E.O. 12472, which reference using satellite systems to support NS/EP requirements. This project combines multiple activities and is divided into three specific subtasks:

- ▼ Advanced Communications Technology Satellite (ACTS)
- ▼ American Mobile Satellite Corporation (AMSC)
- ▼ Enhanced Satellite Studies (ESS).

Advanced Communications Technology

Satellite. The NCS has a Memorandum of Understanding (MOU) with the National Aeronautics and Space Administration (NASA) to participate in the ACTS program. ACTS is a NASA-funded experimental satellite program designed to keep the United States at the forefront of telecommunications technology. The ACTS program provides the United States Government and industry an opportunity to experiment with many new technologies including:

- ▼ Communications in a higher frequency band (Ka-band)
- ▼ Rain fade compensation
- ▼ On-board processing and switching
- ▼ Hopping spot beams.

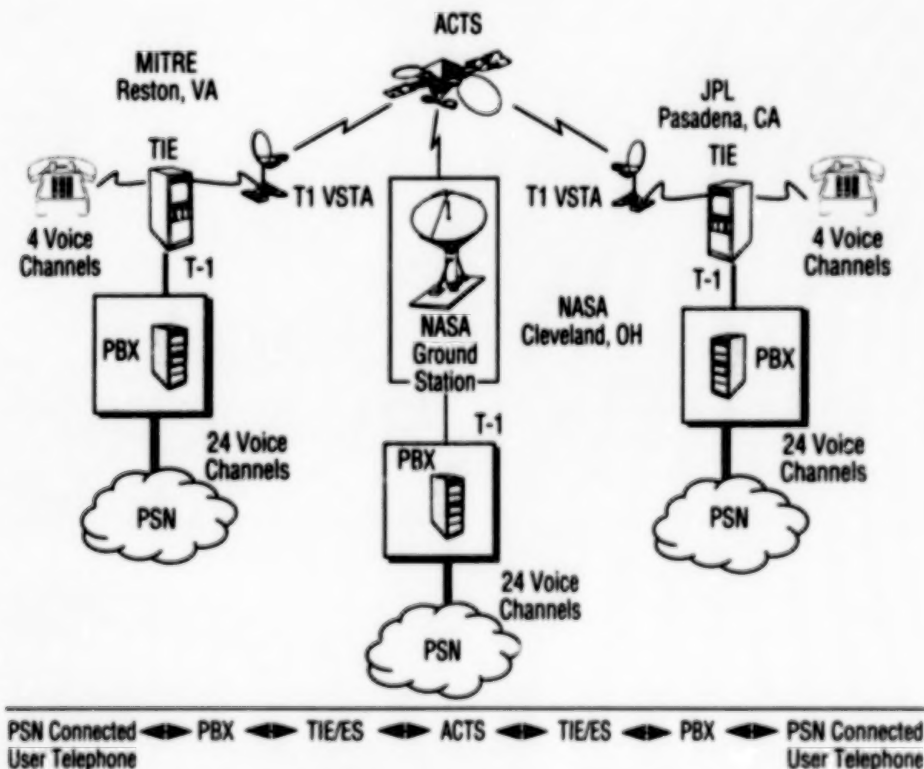
Since 1985 the NCS has been a key participant in the ACTS program. Several experiments are planned to demonstrate PSN restoral to provide NS/EP communications (see Exhibit 2-17). The NCS has undertaken many initiatives including:

- ▼ Funding two Ka-band T-1 VSAT earth stations
- ▼ Developing NS/EP features (e.g., security priority, precedence, and retry)
- ▼ Demonstrating secure communications using the Jet Propulsion Laboratory (JPL) ACTS Mobile Terminal (AMT)

- ▼ Experimenting with ACTS high data rate capabilities.

American Mobile Satellite Corporation. The NCS is participating with JPL and the AMSC to demonstrate secure mobile communications over the AMSC satellite system. The AMSC is a commercial satellite system designed to provide mobile communications throughout North America using three geostationary satellites (the first will be launched in mid-1994). The AMSC is currently the only company with an FCC license to provide an operational mobile satellite system (MSS) in the L-band frequency range capable of operating anywhere within the United States. This system will use digital channels to more effectively and efficiently process communications. The NCS AMSC effort includes the following:

EXHIBIT 2-17
PSN Restoral



- ▼ Investigating the capability of the AMSC architecture to provide NS/EP requirements
- ▼ Developing secure and survivable mobile satellite assets
- ▼ Experimenting with and analyzing the potential use of this mobile satellite system.

The NCS funded JPL to develop a link simulator of the AMSC service. The simulator has allowed preliminary experimentation and analysis of anticipated parameters including traffic, weather, and shading conditions.

Enhanced Satellite Studies. The recent emergence of MSS's (e.g., Iridium, Odyssey, Ellipso) has flooded the market with potential sources of NS/EP communications. To stay abreast of these and other new and developing satellite technologies, the NCS has initiated the ESS. The goal of this study is to analyze and assess the capability of emerging technologies to provide telecommunication services to NS/EP users. Although the major focus of this study is on the large array of MSS, ESS will also investigate high data rate communications, ATM over satellite, and the B-ISDN environment. Recent activities include:

- ▼ Collection of MSS FCC license filings
- ▼ Analysis of proposed mobile systems for applicability to NS/EP users
- ▼ Development of experiments with ATM over satellite operating at T-1 (1.544 Mbps) rates and expanding up to OC-12 (622 Mbps)
- ▼ Planning for experimentation with and use of developing satellite systems.
- ▼ The NCS is always investigating potential sources of providing quality, reliable communications to NS/EP users. The ESS program provides an opportunity to study and experiment with new technologies in the rapidly changing world of telecommunications.

International Emergency Telecommunications Planning Activities

UNITED STATES AND CANADA TELECOMMUNICATIONS PLANNING

The Working Group of the United States/Canada Civil Emergency Planning Committee for Telecommunications met in May 1993 in Edmonton, Alberta, Canada. The Regional Emergency Telecommunications Coordinators of the Department of Communications Canada participated in this meeting for the first time. The committee decided to initiate a review and revision of the Terms of Reference (TOR) of the Committee for Telecommunications. In light of the abolishment of the Department of Communications Canada, the committee determined that the committee's co-chairs should be fixed at an appropriate level to foster continued participation. The United States will provide the initial draft of the revised TOR in the fall of 1993.

In June 1993, the United States/Canada Civil Emergency Planning Consultative Group met in Washington, D.C. Co-chaired by the Director, FEMA, and the Executive Director, Emergency Preparedness Canada, the Consultative Group endorsed the proposed revision to the TOR of the Committee for Telecommunications.

NORTH ATLANTIC TREATY ORGANIZATION CIVIL COMMUNICATIONS PLANNING COMMITTEE

The OMNCS/NCC represents the United States on the NATO Civil Communications Planning Committee (CCPC) and its working group. For these forums, the NCS/NCC is considered the United States Post, Telephone, and Telegraph organization and, therefore, works closely with the United States Postal Service, which provides the expertise for NATO postal matters. The CCPC has two other groups reporting directly to it: the Exercise Planning Team and the EMP Expert Group. The OMNCS provides leadership and repre-

sentatives to the CCPC groups and makes up a part of the United States delegation. The Department of State detailee to the OMNCS is the United States Representative to the CCPC, to its working group, and heads the United States delegation to the CCPC when it meets in plenary session. The CCPC met in plenary session in Brussels, Belgium, twice during this reporting period.

Because of the enormous changes in the European political, economic, and military environment, NATO continues to reexamine all of its activities and organizations to ensure that it can meet its obligations as outlined in its new Strategic Concept and reduce the resources required to meet its mission. The North Atlantic Council has approved the continued existence of the CCPC and charged it to provide more civil communications support to the Alliance. As a result, the CCPC has revised its compendium, work programs, plans, and activities to meet the current requirements. However, the committee was able to reduce by half the number of its subcommittees and the number of associated meetings held each year, thus conserving resources.

Some of the major CCPC activities and accomplishments include:

- ▼ The completion of a special cost/benefits study and its presentation to the NATO military authorities by a five-nation telecommunications commercial group. AT&T (which represented United States interests) along with the United Kingdom, the Netherlands, Germany, and France prepared the study comparing a lease versus buy arrangement for telecommunication services.
- ▼ The EMP Expert Group completed its technical report, "Protection of Civil Telecommunication Networks Against Electromagnetic Pulse (EMP) Effects."
- ▼ Project Civil International Preference Scheme (CIPS) began. This project will try to determine how to provide preferential treatment for telecommunication service to selected individuals. The

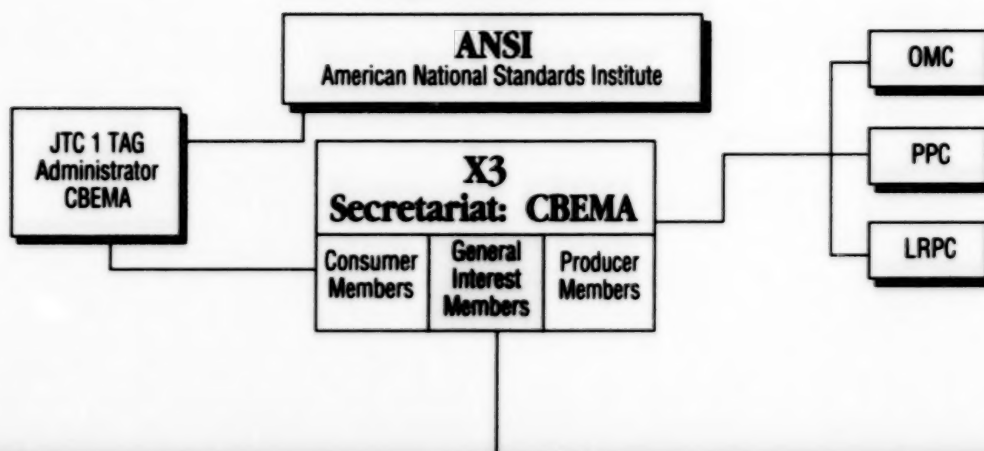
NSTAC IES's ECC Ad Hoc Group's work provided the input from the United States. This contribution, because of its timeliness and quality, became the de facto baseline for the CIPS project. Six nations — France, Germany, the Netherlands, Norway, the United Kingdom, and the United States — compose the rapporteurs addressing the problem.

- ▼ Studies conducted by the OMNCS in cooperation with the National Security Agency produced a prototype secure X.400 encryption/decryption system that has been demonstrated to the NATO community. Successful international testing took place between the United Kingdom and Canada, which resulted in the CCPC's accepting the capability for use. The United States has offered to help the other Alliance nations develop the capability on their own.
- ▼ Policy guidance was produced for the Alliance nations concerning their transition from Government-owned to privately owned and operated telecommunication systems. This guidance highlights areas that must be addressed to ensure that the respective governments maintain some control over telecommunications during stress periods.

Appendix to Technology and Standards

EXHIBIT 2-18

X3 Organizational Chart



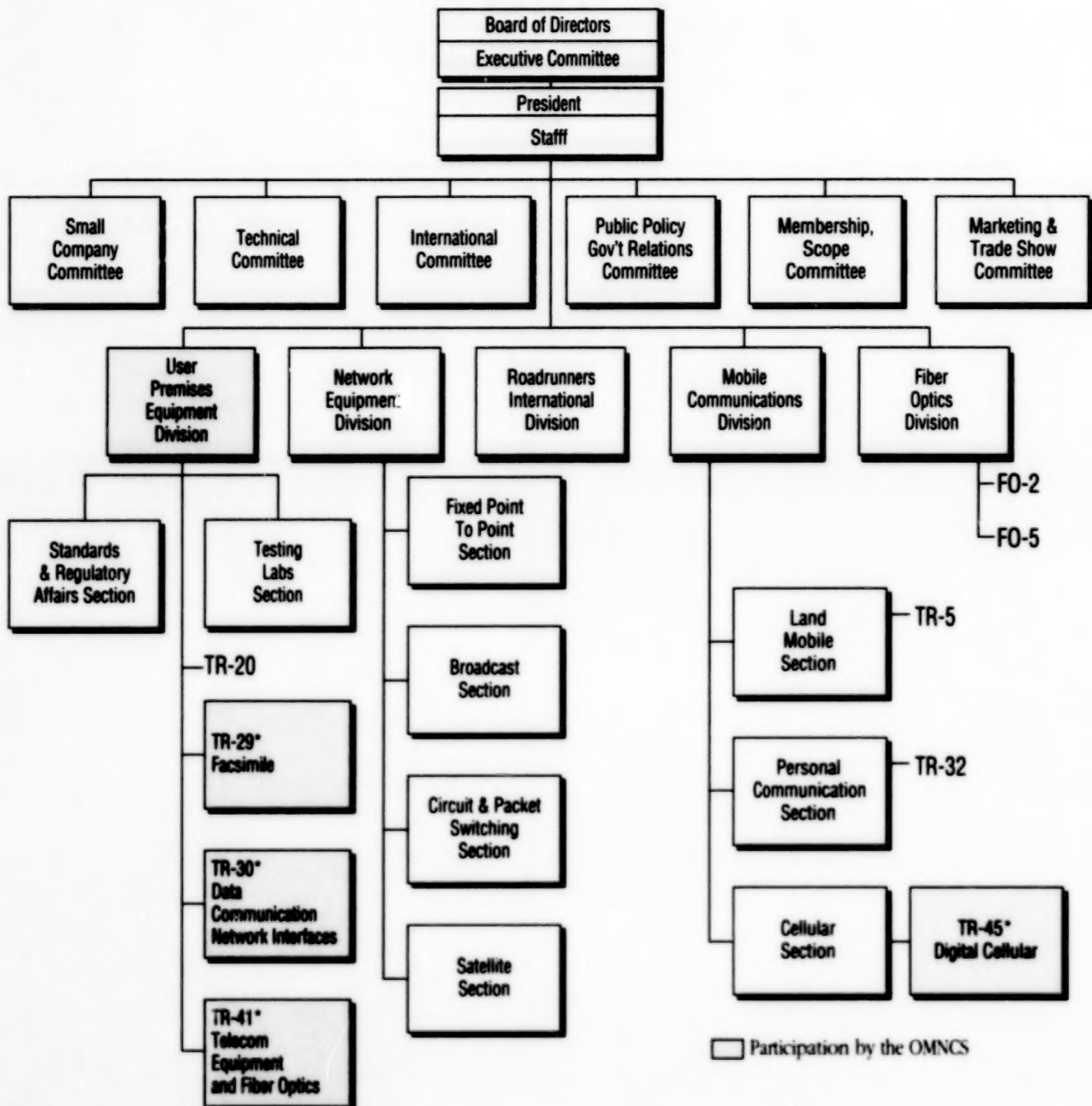
X3A1 Optical Character Recognition	X3H6 Case Tool Integration Models	X3J16 C++	X3T5 Open Systems Interconnection
X3B5 Digital Magnetic Tape	X3H7 Object Information Mgmt	X3J17 Prolog	X3T6 Non-Contact Information Systems Interfaces
X3B6 Instrumentation Tape	X3J1 PL/I	X3J18 REXX	X3T7 Internationalization
X3B7 Magnetic Disk	X3J2 Basic	X3J19 Xbase	X3T8 Fault Isolation
X3B9 Paper/Forms Layout	X3J3 FORTRAN	X3K5 Vocabulary	X3T9 I/O Interface
X3B10 Credit/Identification Cards	X3J4 COBOL	X3L2 Codes & Character Sets	X3V1 Text: Office & Publishing Systems
X3B11 Optical Digital Data Disks	X3J7 APT	X3L3 Audio/Picture Coding	X3W1 Office Machines
X3H2 Database	X3J9 PASCAL	X3L8 Data Representation	SC21 TAG-Information Retrieval, Transfer & Management for ISO
X3H3 Computer Graphics	X3J10 APL	X3S3 Data Communications	SC22 TAG-Language
X3H4 Information Resource Dictionary System	X3J11 C	X3T2 Data Interchange	
X3H5 Parallel Processing	X3J13 DIBOL	X3T3 Open Distributed Processing	
Constructs for High Level Programming Language	X3J13 LISP	X3T4 Security Techniques	
	X3J14 FORTH		
	X3J15 DATABUS		

☐ Participation by the OMNCS

The NCS maintains voting membership in the ANSI-accredited Committee X3, which develops, reviews, and approves American national standards for information technology. The standards cover interoperability of hardware and portability of software. Committee X3 also develops technical reports and acts as a technical

advisory group to the International Standards Organizations. The ISO is an international organization that develops standards for goods and services to facilitate international trade and exchange. ANSI is the United States national standards group that maintains membership in ISO.

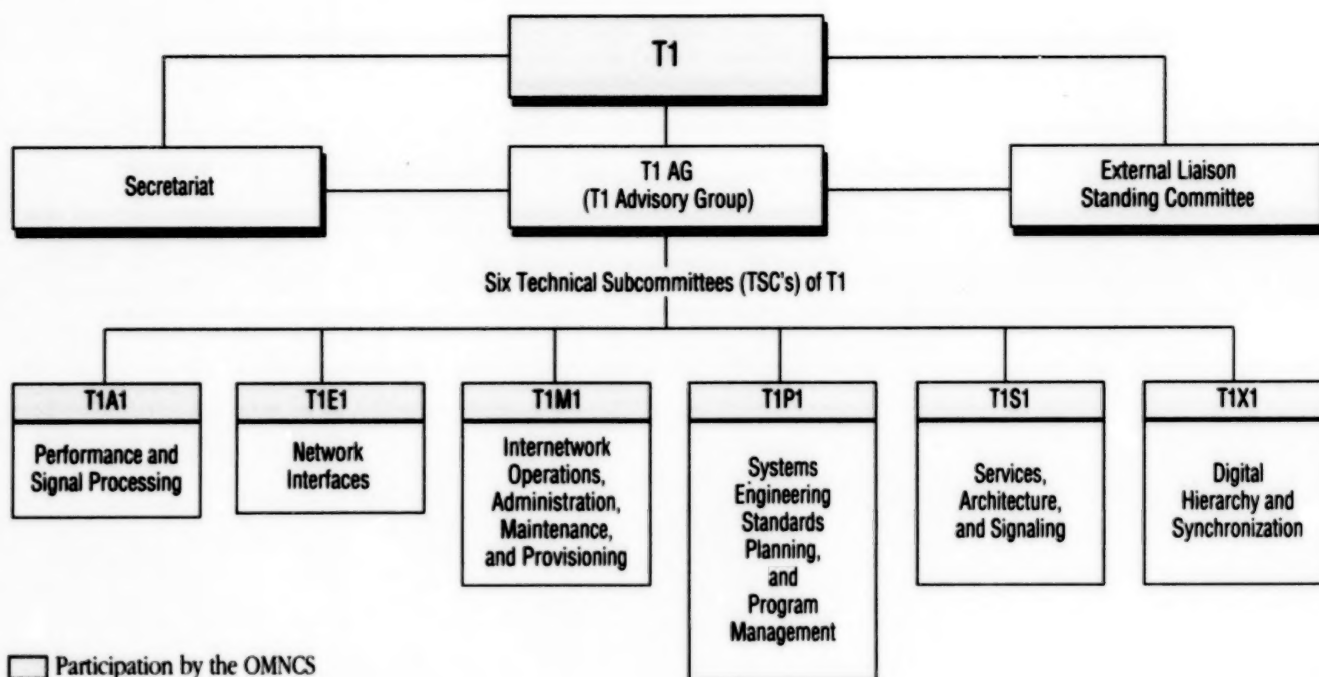
EXHIBIT 2-19 TIA Organizational Chart



The TIA plays a key role with respect to the formulation of standards for a number of telecommunication products. TIA was formed in April 1988 when the United States Telecommunications

Suppliers Association and the Information and Telecommunications Technologies Group of the EIA merged.

EXHIBIT 2-20
Structure of Committee T-1, Telecommunications (FY93)



The NCS maintains voting memberships in ANSI-accredited Committee T-1, which develops technical standards for interconnection and interoperability of telecommunication networks. Committee T-1 also

develops positions for the Department of State on international proposals.

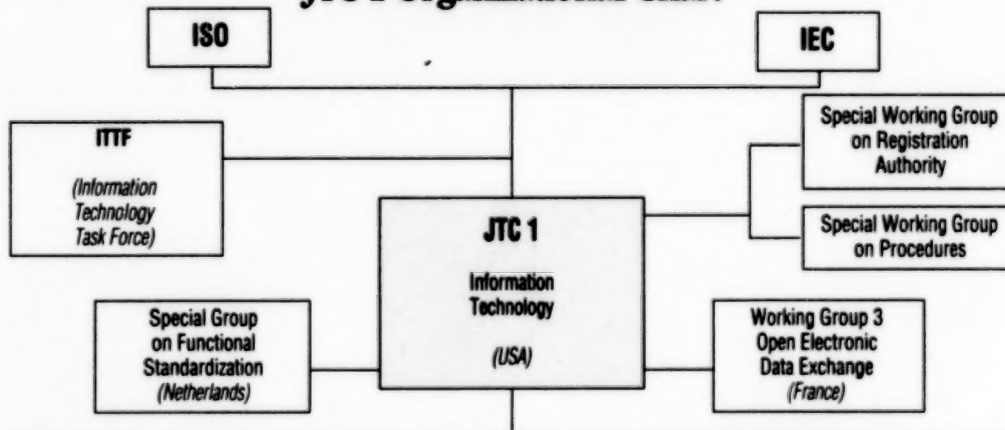
EXHIBIT 2-21

Paths to International Standards Development



This exhibit illustrates the path U.S. standards proposals travel to obtain ITU consideration.

JTC 1 Organizational Chart



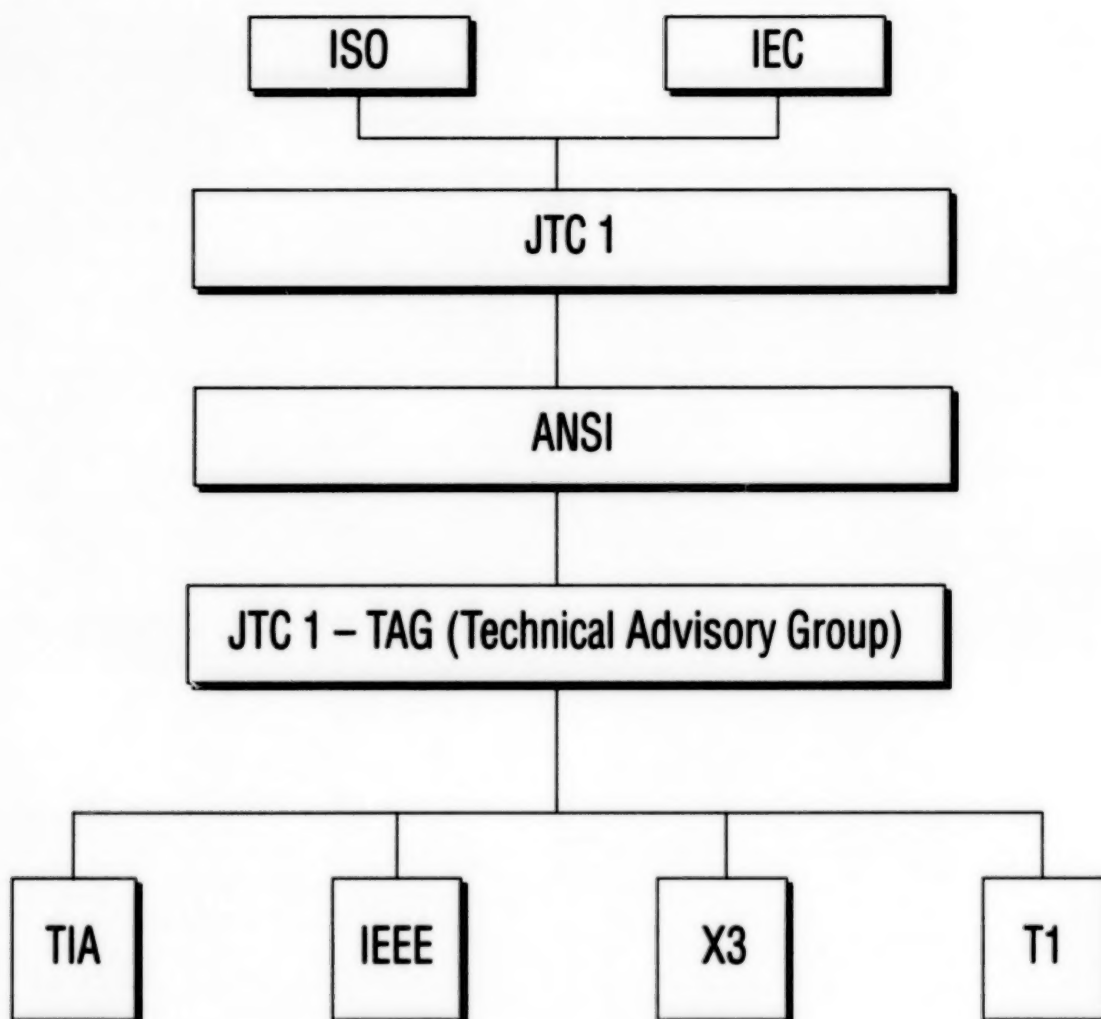
SC1	Vocabulary (France)	SC21	Informative Retrieval, Transfer, and Management of OSI (USA)
SC2	Character Sets and Information Coding (Switzerland)	SC22	Languages (Canada)
SC6	Telecommunications and Information Exchange Between Systems (USA)	SC23	Optical Disk Cartridges for Information Interchange (Japan)
SC7	Software Development and System Documentation (Canada)	SC24	Computer Graphics (Germany)
SC11	Flexible Magnetic Media for Digital Data Interchange (USA)	SC25	Interconnection of IT Equipment (Germany)
SC14	Representation of Data Elements (Sweden)	SC26	Microprocessor Systems (Japan)
SC15	Labeling and File Structure (Japan)	SC27	IT Security Techniques (Germany)
SC17	Identification Cards and Related Devices (United Kingdom)	SC28	Office Equipment (Switzerland)
SC18	Documentation Processing and Related Communication (USA)	SC29	Coded Representation of Picture, Audio and Multimedia/ Hypermedia Information (Japan)

☐ Participation by the OMNCS

NOTE: 1. Country listings designate Secretariat responsibilities.

2. JTC 1 focuses on information technologies of interest to both ISO and the IEC.

EXHIBIT 2-21
**Paths to International Standards Development
(Continued)**

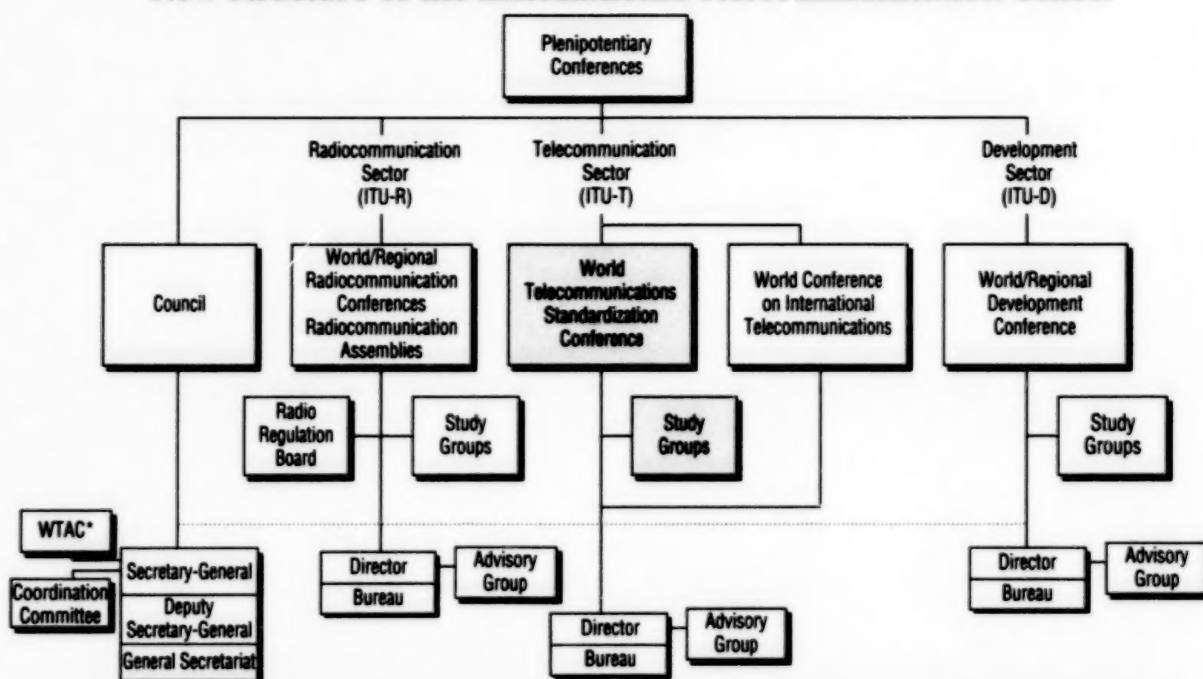


ANSI is the U.S. member body representative to the international JTC 1. The U.S. JTC 1 - Technical Advisory Group (TAG) formulates U.S. positions to the interna-

tional JTC 1, with input from four key U.S. standards organizations.

EXHIBIT 2-22

New Structure of the International Telecommunication Union



CCITT Study Group	TS Study Group	Title
I	1	Service Description
II	2	Network Operation
III	3	Tariff and Accounting Principles
IV	4	Network Maintenance
V	5	Protection Against Electromagnetic Environment Effects
VI	6	Outside Plant
VII	7	Data Network and Open System Communications
VIII	8	Terminal Equipment and Protocols for Telematic Services
CMTT	9	Television and Sound Transmission
X	10	Languages for Telecommunication Applications
XI	11	Switching and Signaling
XII	12	End-to-End Transmission Performance
XVIII	13	General Network Aspects
XVII	14	Modems and Transmission Techniques for Data, Telegraph, and Telematic Services
XV	15	Transmission Systems and Equipment

☐ Participation by the OMNCS *World Telecommunications Advisory Council

The ITU, headquartered in Geneva, Switzerland, was founded in 1865. In 1947, the ITU became a specialized agency of the United Nations. Today, this agency provides a forum for the improvement and rational use of telecommunications. Other responsibilities include establishment of equipment

and systems operating standards, along with coordination and dissemination of information for telecommunications services. The ITU was reorganized in March 1993. This exhibit reflects the new ITU organizational structure, old CCITT study groups, and the new study groups within the ITU's telecommunication sector.

EXHIBIT 2-23
List of FY93 Technical Information Bulletins (TIB's)

No.	Title	Date	AD #
92-16	"CCITT Test Documents" Digitization	Nov 1992	
92-17	Network Congestion Analysis Report	Nov 1992	
92-18	Network Congestion Analysis Results Appendix A (Classified TIB)	Nov 1992	
92-19	Enhancement of Group 3 and Group 4 Facsimile Standards to include Color	Nov 1992	
92-20	Evaluation of Advanced Meteor Burst Communication Techniques	Dec 1992	
92-21	Simulated Effects of Sounding on Automatic Link Establishment HF Radio Network Performance	Dec 1992	
93-1	High Altitude Electromagnetic Pulse Effects Study on Local Area Network Operating in a Similar Wide Area Network Environment	Jan 1993	
93-2	Implications of HDTV for Government Telecommunications	Jan 1993	
93-3	Enhanced Facsimile Services	Jan 1993	
93-4	Digital Access and Cross-Connect Systems (DACS) Electromagnetic Pulse (EMP)	Apr 1993	
93-5	An Assessment of the U.S. Telecommunications Industry Dependence on Foreign Sources as it Impacts the U.S. Telecommunications Infrastructure	Mar 1993	
93-6	The Effects of High-Altitude Electromagnetic Pulse (HEMP) on Telecommunications Assets	Apr 1993	
93-7	Earthquake Modeling Volume I: Executive Summary	Apr 1993	
93-7	Earthquake Modeling Volume II: Assessment Report	Apr 1993	
93-8	Security Measures of Wireless Communications	May 1993	
93-9	Protection of Telecommunications Links from Physical Stress	Jun 1993	
93-10	Earthquake Analysis Implementation Plan	May 1993	
93-11	Network-Level EMP Effects Evaluation on the Primary PSN Tail-Level Networks	Jun 1993	
93-12	Grounding and Bonding for Commercial and Government Buildings Conforming to Telecommunications Infrastructure Standards—A Background Report (Supersedes TIB 92-15)	Jun 1993	

EXHIBIT 2-24

Status of Federal Standards

No.	Title	Date	Final/ Draft	POC	Sub- committee	Public & Industry Comments	Government & Agency Comments	Approval by FTSC	Executive Agent	GSA or NIST for Publication
1045A	High Frequency (HF) Radio Automatic Link Establishment	Undated	Draft	Karty	HF				22 Jan 93	17 Feb 93
1046	HF Radio Automatic Networking Section 1: Basic Networking-ALE Controller	Undated	Draft	Karty	HF				22 Jan 93	17 Feb 93
1049	HF Radio Automatic Operation in Stressed Environment, Section 1: Linking Protection Mil-Std 187-110 Section 2: Anti-Interference	26 Jul 93	Final	Karty	HF					
1055	Interoperability Requirements for Meteor Burst Communications Between Conventional Master & Remote Stations	Undated	Draft	Fenichel	MB				23 Aug 93	
1056	Interoperability Requirements for Encryption of Meteor Burst Communications	Undated	Draft	Fenichel	MB				23 Aug 93	
1057	Interoperability Requirements for Meteor Burst Communications Between Conventional Internetwork Gateway Master Stations	Undated	Draft	Fenichel	MB				23 Aug 93	
FIPS Pub 178 (Fed Std 1080)	Video Coder/Decoder for Audiovisual Service at 56 to 1.92 kbits/s CCITT H.261, Mil-Std 188-131	27 Oct 92	Final	Rekstad						
1094	Administrative Standard for Telecommunications Infrastructure of Commercial Buildings - EIA/TIA 606	Undated	Draft	Jamil				9 Sept 93		

PATENT AWARDED

Recipient: Dennis Bodson
Title: "Adaptive Clumped Dithering with
Clump Plane Separation"
Number: 07/920,624
Award Date: September 7, 1993

PUBLICATIONS

Author: Dennis Bodson
Title: "The Growing Family of Federal
Standards for HF Automatic Link
Establishment (ALE)"
Publisher: QEX Magazine/Part 1 of 6 July
1993; Part 2 of 6 August 1993; Part 3
of September 6, 1993

Author: Dennis Bodson
Title: "Slow Scan Television," June 1993;
"Facsimile," June 1993
Publisher: American Radio Relay League
Handbook, 1993

Author: Iftikar Jamil
Title: "Potential Applications of AIN
Technologies to NS/EP Information
Transfer Needs," October 1992
Publisher: MILCOM 92

Author: Dennis Bodson
Title: "International Standardization—U.S.
Government Perspective,"
Proceedings of the Second Meeting
of the Intergovernmental U.S.-
Russian Business Development
Committee's Standards Working
Group, March 23-24, 1993.

III. NS/EP TELECOMMUNICATIONS POLICY AND REGULATORY DEVELOPMENTS

This section highlights significant executive, judicial, regulatory, and proposed and enacted legislation that affected NCS activities during fiscal year 1993.

Executive

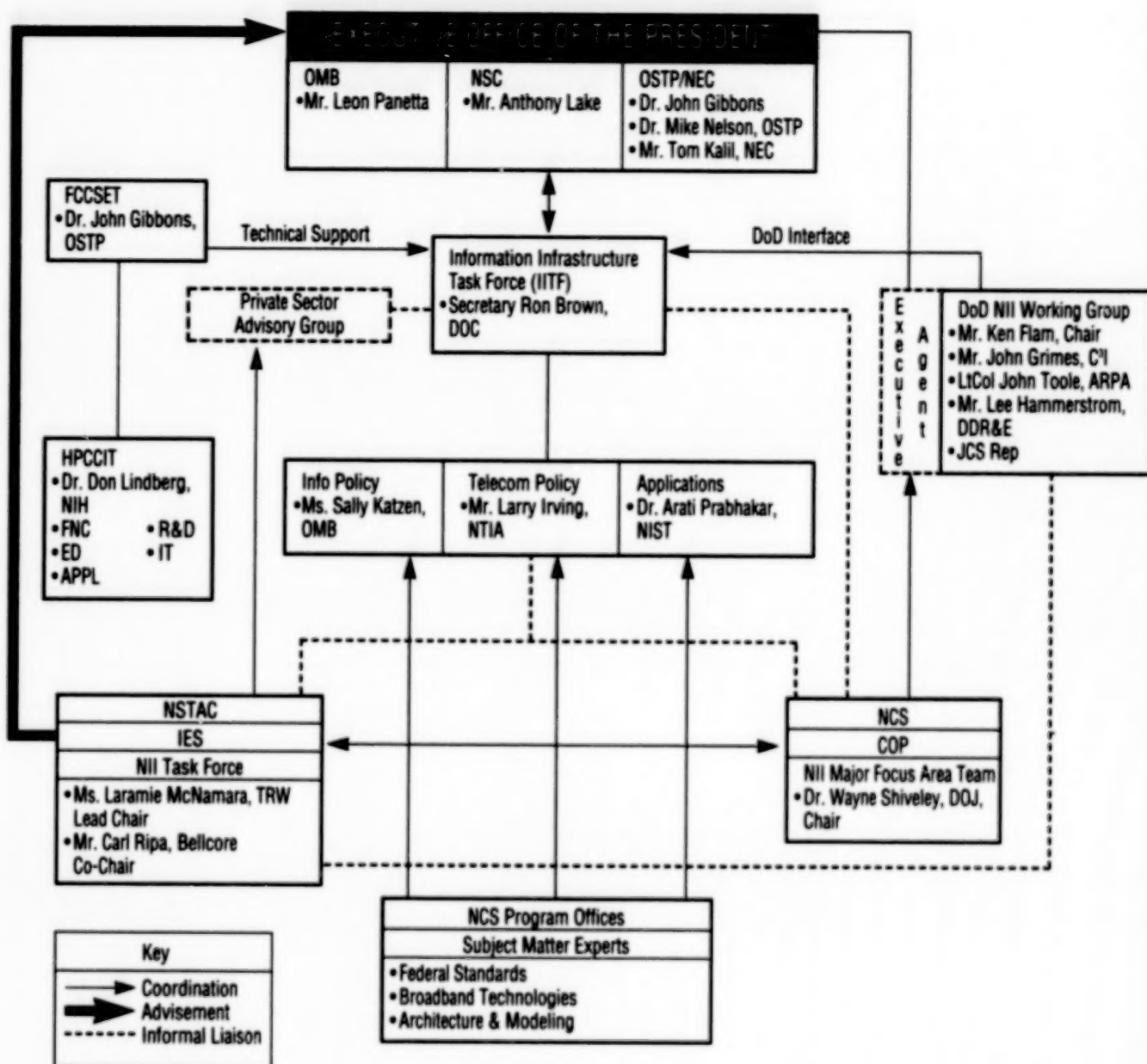
INFORMATION INFRASTRUCTURE TASK FORCE

The importance of the continued development of the National Information Infrastructure (NII) is recognized by both Government and industry. The primary focus of Governmental NII activities centers on the Information Infrastructure Task Force (IITF), chaired by the Secretary of Commerce. The IITF is the centerpiece of a larger Federal effort to facilitate the continued development of the NII, and will be responsible for addressing a wide variety of issues including regulatory policy, Government information policy, standards development, and intellectual property and privacy rights. The role of the IITF is to forge interagency consensus on critical implementation and development issues. The bulk of IITF activities will be conducted through three separate working committees: the Telecommunications Policy Committee, which will focus on issues such as competition, cross-ownership, universal service, and the relationships between Federal and State regulators; the Information Policy Committee, which will center its activities on intellectual property and privacy rights; and the Committee on Applications, which will be responsible primarily for coordinating efforts to demonstrate and promote applications of information technology.

EXECUTIVE ORDER 12864, UNITED STATES ADVISORY COUNCIL ON THE NATIONAL INFORMATION INFRASTRUCTURE

President Clinton signed Executive Order (E.O.) 12864, United States Advisory Council on the National Information Infrastructure, on September 15, 1993, with the intent of soliciting industry participation in the continued development of the NII. Working in concert with the IITF, this Advisory Council will advise the Secretary of Commerce on the development of a national strategy that fosters further development of NII capabilities and applications. Exhibit 3-1 depicts the relationship of the council and the IITF to other Federal departments, agencies, organizations, and bodies, including the NCS and the President's National Security Telecommunications Advisory Committee (NSTAC). The council may address issues such as defining the roles of the private and public sector, measuring the impact of current and proposed regulatory regimes, integrating the NII with agile manufacturing and electronic commerce, improving the delivery of health care and educational programs, ensuring network security and emergency preparedness, providing for universal service and access, and protecting the right to privacy. The council will consist of not more than 25 members appointed by the Secretary, who has the authority to designate a chairperson and vice-chairperson. The chairperson may invite experts to submit information to the council and form subcommittees to review related issues. The council has a 2-year charter to fulfill its responsibilities unless it is extended prior to the expiration of that 2-year period.

EXHIBIT 3-1 NCS/NSTAC Role in the NII



NATIONAL PERFORMANCE REVIEW

The National Performance Review issued its report, "Creating a Government That Works Better and Costs Less," on September 7, 1993. The report focused on streamlining the budget process, reducing Government waste and bureaucracy, eliminating redundant Government functions and positions, placing an emphasis on customers, empowering Government employees to achieve results, and investing in productivity. The section detailing its findings on Information Technology, with specific recommendations concerning the NCS, is scheduled for release later in calendar year 1993.

Judicial

MODIFIED FINAL JUDGMENT (MFJ)

The 1984 MFJ consent decree divested the local exchange companies from the parent American Telephone and Telegraph (AT&T), grouping them into seven Regional Bell Operating Companies (RBOC). Under the terms of the MFJ, the RBOC's retained monopoly powers in the local exchange but were restricted from providing information services, providing transport service between local access and transport areas (LATA), and manufacturing telecommunications equipment. These prohibitions were intended to prevent the RBOC's from using their monopoly power in the local exchange to cross-subsidize ventures in related markets and create new monopolies. The RBOC's have consistently held that these prohibitions restrict them from competing equally in the marketplace.

These restrictions have been weakened by a series of judicial and legislative measures. Despite efforts in Congress to assert a policy-making role in telecommunications, the primary activity remains in the courts, where the RBOC's submit a substantial number of waiver requests with the intent of diluting the MFJ prohibitions. Some of these waivers are listed below.

Information Services.

The MFJ restricted the RBOC's from providing information services to consumers. The prohibition was lifted after a series of judicial decisions and appeals starting with the first triennial review of the MFJ and was later confirmed by the U.S. Supreme Court. The National Cable Television Association and others have contested lifting the MFJ prohibition by questioning the basis for granting the waiver. In May 1993, the U.S. Court of Appeals in Washington, D.C., found no evidence that lifting the ban would decrease competition in the information services market. Because the question of competition is central to any judicial reimposition of the MFJ ban, this decision effectively ends any attempt to reinstate the restriction.

Inter-LATA Service.

The restriction on inter-LATA service remains in effect despite mounting pressure from the RBOC's, which maintain that common channel signaling should not be included in the prohibition on carrying inter-LATA telephone traffic. The RBOC's claim that installing separate signaling interfaces between every LATA requires an unreasonable expense, especially as the service is neither a public nor revenue-generating service. The prohibition, however, was confirmed in a District Court ruling in 1990. In 1993, an appeal reached the U.S. Supreme Court, which declined to hear the case and let the prohibition stand.

Early in 1993, the RBOC's requested an MFJ waiver to permit them to originate inter-LATA paging and access to voice storage and retrieval associated with paging. Because the RBOC's competitors already provide inter-LATA service, the Department of Justice (DOJ), in forwarding the request to the court, concluded that granting the waiver would not restrain competition in the industry. This interpretation was contested by other members of the voice paging community. The waiver was forwarded by memorandum to the U.S. District Court in 1993, where it is awaiting action.

The RBOC's are also seeking an MFJ waiver directly addressing interexchange service across LATA boundaries. They assert that it is no longer sensible to

distinguish between intra-LATA and inter-LATA service for information services. The RBOC's claim that the court now permits them to offer information services, so they should also be permitted to develop efficient and convenient systems. They also claim that their market share is not sufficient to threaten competition. The request for waiver was delivered to DOJ during the summer of 1993, where it is awaiting action.

In a landmark decision, the U.S. District Court granted an MFJ waiver permitting the State of South Carolina to use the corporate network of Bell South when the Governor officially declares a state of emergency and the public network is unavailable. Based on the lessons learned from Hurricane Hugo, the waiver allows the RBOC to provide inter-LATA service to the State during emergencies. Although this service is offered by Bell South free of charge, it serves to further erode the MFJ inter-LATA restrictions.

Manufacturing Telecommunications Equipment.

In January 1992, DOJ sought a court ruling that would allow RBOC financing and/or royalty arrangements with an affiliated manufacturer of telecommunications equipment, as long as the RBOC has less than a one-twentieth equity interest. The important aspects of a decision in this case will be the court's definition of "affiliated enterprise" and the resultant impact on the RBOC's ability to affiliate with any enterprise, manufacturing or not.

CABLE COMMUNICATIONS POLICY ACT OF 1984

Two RBOC subsidiaries have challenged the Cable Communications Act of 1984 in court, citing unconstitutional restrictions on first amendment rights to free speech. The Cable Act establishes the cross-ownership ban, which restricts telephone companies from providing "video programming" (cable service) directly to subscribers in their own service areas. On August 24, 1993, a Federal ruling struck down the cross-ownership ban, permitting Bell Atlantic to build a cable system in Alexandria, Virginia. DOJ has requested that

Judge Ellis review his decision to limit the scope of the decision as it applies to other RBOC's. Although the decision is not binding in other Federal judicial districts, it establishes a precedent that may result in other RBOC's following Bell Atlantic's lead in constructing cable television networks in their respective service areas.

Regulatory

The Federal Communications Commission (FCC) has continued its policy of encouraging competition in the marketplace, improving network reliability, and ruling on spectrum allocation initiatives.

COMPETITIVE ACCESS

The traditional monopoly enjoyed in the local exchange market by the local exchange carriers (LEC) is increasingly being challenged. A two-part ruling in mid-September 1992 by the FCC required Tier I LEC's to provide collocation, or at least virtual collocation, service to other providers, such as interexchange carriers and competitive access providers (CAP). The ruling was specifically intended to open the local exchange monopoly to direct competition.

The FCC also proposed a rule to remove barriers to competition in interstate switched transport. The rule requires the largest LEC's to offer expanded opportunities to CAP's and others to interconnect with the LEC switched access networks to provide interstate switched transport. This interconnection would allow the CAP's to offer switched transport between LEC central offices and the points-of-presence of the interexchange carriers. Under such a system, CAP's would be able to interconnect between LEC switches, subscriber lines, and portions of the LEC switched transport. In the second part of the proposed rulemaking, the FCC proposed removing barriers to competitive switching and transport. In this case, LEC and CAP switched access networks could compete directly.

NETWORK RELIABILITY COUNCIL (NRC)

The NRC, consisting of representatives from service providers, manufacturers, user groups, and the Government, was established by the FCC in the wake of several major telephone outages. It held its first meeting in February 1992 and addressed questions of network reliability such as Signaling System 7 (SS7) weaknesses, power systems, fiber-optic cable cuts, Emergency 911 systems, fire prevention, digital cross-connect, and switching systems. Completing its 2-year charter, the NRC issued a report with recommendations to improve service reliability in these areas. The report emphasized the dependency on good communications plans and procedures to facilitate notification and restoration of telecommunications. Although the Exchange Carriers Standards Association (ECSA) has agreed to monitor telephone service outage reports and commission research work as necessary, the FCC has decided not to dissolve the NRC in the immediate future.

The OMNCS has actively participated in ECSA's Network Reliability Steering Committee (NRSC), which was established at the request of the NRC to assemble and analyze the data contained in FCC outage reports. To date, the OMNCS has worked to develop the NRSC Charter and Operating Principles, and participated in the internal review of the first NRSC report, "Macro-Analysis: 2nd Quarter 1993." In addition, the OMNCS is monitoring the activities of the ECSA Network Operations Forum (NOF), specifically its SS7 Workshop. The NOF provides industry representatives with a platform to resolve operations issues that require industry-level participation. As part of these efforts, the OMNCS is briefing the NOF on its activities relating to the use of the standard, "Signaling System No. 7 High Probability of Completion (HPC) Network Capability" (ANSI T1.631-1993), approved on June 28, 1993.

SPECTRUM REALLOCATION

On September 23, 1993, the FCC voted 2-1 to reallocate 160-megahertz (MHz) of spectrum in the 2-gigahertz (GHz) band to personal communications services

(PCS). The allocation is divided into two 30-MHz blocks, one 20-MHz block, and four 10-MHz blocks. The licensing term is 10 years, with renewal expectancy provisions similar to those that apply to cellular service. A licensee will be required to offer service to at least one-third of the population in its market areas within 5 years, two-thirds of the population within 7 years, and 90 percent of the population within 10 years. The FCC determined that those companies with cellular licenses may participate in PCS outside of their service areas or in any area where the cellular licensee provides service to less than 10 percent of the population. In addition, the FCC designated the 20-MHz block and one of the 10-MHz blocks for license preferences favoring small businesses, rural telephone companies, and minority- and women-owned businesses.

Legislative

EMERGING TELECOMMUNICATIONS TECHNOLOGIES ACT OF 1993

On February 2, 1993, Representatives Dingell (D-MI) and Markey (D-MA) introduced the Emerging Telecommunications Technologies Act of 1993 (H.R. 707), an updated version of legislation introduced in 1991. The Senate version (S. 335) was introduced by Senator Inouye (D-HI) on February 4, 1993. These bills would transfer no less than 200 MHz of spectrum from the Federal Government to non-Federal Government users. The Senate version contains provisions authorizing a trial auction of 30 MHz of spectrum through 1996. The House bill contains no such provision, although both bills call for a comprehensive review and reform of the spectrum allocation procedure. The Senate version also addresses State regulation of wireless services, and allows States currently regulating wireless services to continue to do so until the FCC rules otherwise. The FCC would regulate wireless services in all other States. State and consumer groups contend that States not regulating service now may find it desirable to do so in the future. The House and Senate versions of the bill were rolled

into the Budget Reconciliation Bill (H.R. 2264), which was passed by both Houses of Congress and signed into law by President Clinton on August 4, 1993.

TELECOMMUNICATIONS INFRASTRUCTURE ACT OF 1993, S. 1086

Introduced by Senators Inouye and Danforth (R-MO), this bill is aimed at forging a national-level telecommunications policy to foster the continued investment in and development of the Nation's information infrastructure by opening markets to competition. The premise of the bill is "that increased competition in the provision of communications services in the local market will encourage private infrastructure development and have beneficial effects on the price, universal availability, variety, and quality of communications services." The bill sets forth numerous new regulatory policies that will greatly enhance the continued development of the NII, such as telecommunications competition (market entry, network interconnection and access, number portability, and regulatory flexibility for competitive services), telephone entry into cable television, network standards and planning, long distance services, and information services. The Senate Subcommittee on Communications of the Committee on Commerce, Science, and Transportation conducted hearings on July 14, 1993, and September 8, 1993.

LOCAL INFRASTRUCTURE MODERNIZATION ACT OF 1993, S. 570

LOCAL EXCHANGE INFRASTRUCTURE MODERNIZATION ACT OF 1993, H.R. 1312

The Local Infrastructure Modernization Act (S. 570), referred to the Senate Committee on Commerce, Science, and Transportation on March 11, 1993, formalizes a means to ensure the interoperability of the Nation's telephone network. The bill directs the FCC to establish a forum for LEC's to coordinate network planning. The bill includes a narrow antitrust exemption, which would permit the development of technical standards to enable small LEC's to connect easily with

large neighbors and offer the same level of services. The House companion to this bill, the Local Exchange Infrastructure Modernization Act (H.R. 1312), was introduced by Representative Boucher (D-VA). It amends the Communications Act of 1934 to ensure the interoperability of the Nation's telephone network through network planning and coordinated standards development. The bill was referred to the Subcommittee on Telecommunications and Finance of the House Committee on Energy and Commerce, where it is awaiting action.

NATIONAL INFORMATION INFRASTRUCTURE ACT OF 1993, H.R. 1757

This bill advances the next generation of the digital highway by transferring the technology realized from the High Performance Computing Act of 1991 into practical applications, such as digital libraries, health care delivery, teaching, and access to Government information. It establishes the Federal Government's role in ensuring compatibility, promoting testbeds, and facilitating the deployment of the information network. This bill was passed by the House of Representatives on July 26, 1993, and was referred to the Senate Committee on Labor and Resources on July 27, 1993. The Senate Subcommittee on Education received the proposed bill, and scheduled hearings for September 14, 1993.

COMMUNICATIONS COMPETITIVENESS AND INFRASTRUCTURE MODERNIZATION ACT OF 1993, H.R. 1504

Introduced by Representative Boucher, this bill would lift the cross-ownership ban, allowing telephone companies to provide cable television services and vice versa. It was referred to the House Committee on Energy and Commerce on March 29, 1993, and subsequently was referred to the Subcommittee on Telecommunications and Finance, where it is awaiting action.

**NATIONAL NETWORK SECURITY BOARD
ACT, S. 237****NATIONAL NETWORK SECURITY AND
RELIABILITY REPORTING ACT, S. 238**

The first of these bills provides a board for the FCC to investigate network outages, similar to the National Transportation Safety Board. The second bill requires the board to report to Congress annually on the default, redundancy, and recovery mechanisms that are necessary to maintain and restore telecommunications service.

**NATIONAL COMPETITIVENESS ACT OF
1993, TITLE V OF S. 4**

The purpose of Title V of the bill is to "help ensure the best possible application of high-performance computing and high-speed networking." It identifies four major applications: education, manufacturing, health care, and libraries. On July 28, 1993, the bill was referred to the full Senate and placed on the Senate legislative calendar.

IV. NS/EP TELECOMMUNICATIONS SUPPORT AND ACTIVITIES OF NCS MEMBER ORGANIZATIONS

Overview

The NCS is a confederation of the telecommunication assets of the 23 Federal departments and agencies represented on the Committee of Principals (COP). The NCS's administrative structure consists of an Executive Agent, COP, and Manager, NCS. The COP is composed of high-level Government officials representing Federal operational, policy, regulatory, and enforcement organizations. Its diverse representation embraces the full spectrum of Federal telecommunication assets and responsibilities. The COP provides a unique interagency forum for understanding and responding to NS/EP telecommunication issues.

This section presents submissions by the 23 NCS member organizations concerning their NS/EP telecommunication activities during fiscal year (FY) 1993. These reports review members' financial, policy, and technical concerns associated with NS/EP telecommunications. Review of the individual reports discloses meaningful trends in Federal telecommunications management, operation, and planning.

Member reports are organized in the following format:

- ▼ NS/EP Telecommunications Mission
- ▼ Telecommunications Staff Organization
- ▼ Significant Accomplishments
- ▼ Current and Ongoing NS/EP Telecommunication Activities
- ▼ Pending Issues (where applicable).

Member reports continue to show a trend toward more consolidated telecommunication services and NS/EP requirements.

Reports also reflect the importance members place on survivable telecommunication resources for uninterrupted performance of their organizations'

essential functions during the entire spectrum of emergencies. Member organizations' active participation in the COP and Council of Representatives (COR) and their subcommittees allows them to upgrade and expand their existing systems and resolve pending NS/EP telecommunication issues.

In addition to the reports presented, Department of State (DOS) and Central Intelligence Agency (CIA) reports are available in a classified supplement, which can be obtained upon request and approval by DOS and CIA. Approval of requests submitted to the Office of the Manager, NCS, are based on "a need to know" basis that must be stated in all requests.

NCS PRIMARY ASSETS

The following is a list of selected NCS primary assets, arranged in protocol order by NCS member organization and then alphabetically by asset.

DEPARTMENT OF STATE

- ▼ Diplomatic Telecommunications Service
- ▼ Nuclear Risk Reduction Center

DEPARTMENT OF THE TREASURY

- ▼ Consolidated Data Network
- ▼ Digital Telecommunications System
- ▼ Treasury Enforcement Communications System
- ▼ Wireless and Radio Support Service

DEPARTMENT OF DEFENSE

- ▼ Advanced Research Project Agency (formerly the Defense Research Project Agency) Network
- ▼ Defense Data Network
- ▼ Defense Message System
- ▼ Defense Satellite Communications System

- ▼ Defense Switched Network
- ▼ Direct Communications Link (Washington-Moscow Hotline)
- ▼ Future Secure Voice System
- ▼ Joint Chiefs of Staff Alerting Network
- ▼ National Military Command System
- ▼ Washington Area Wideband System
- ▼ Worldwide Military Command and Control System

DEPARTMENT OF JUSTICE

- ▼ Automatic Data Processing Teleprocessing System
- ▼ Drug Enforcement Administration Nationwide Very High Frequency Radio System
- ▼ Drug Enforcement Administration Secure Voice System
- ▼ Immigration and Naturalization Service Tactical Radio System
- ▼ Immigration and Naturalization Service Integrated Network Communications
- ▼ Justice Network
- ▼ Justice Telecommunications Service
- ▼ National Crime Information Center
- ▼ U.S. Marshal Service Communications System
- ▼ U.S. Marshal Service Special Operations Group

DEPARTMENTS OF THE INTERIOR AND AGRICULTURE

- ▼ Boise National Fire Center Transportable Radio Cache (Joint)

DEPARTMENT OF COMMERCE

- ▼ Automation of Field Operations and Services
- ▼ National Oceanic and Atmospheric Administration Weather Radio

DEPARTMENT OF TRANSPORTATION

- ▼ Emergency Transportation Radio Network

Federal Aviation Administration

- ▼ Aeronautical Fixed Telecommunications Network
- ▼ Aeronautical Message Circuits (Service B)
- ▼ Electronic Tandem Network
- ▼ Emergency Voice Communications System
- ▼ Integrated Communications Switching System
- ▼ National Airspace Data Interchange Network
- ▼ National Airspace System Network
- ▼ National Radio Communications System
- ▼ Radar Microwave Link Trunking
- ▼ Radio Communications Link
- ▼ Television Microwave Link
- ▼ Voice Switching and Control System

United States Coast Guard

- ▼ Hybrid Data Network
- ▼ Long-Range Aid to Navigation
- ▼ Medium Frequency and High Frequency Long-Range Radio: Medium Frequency Single Side Band Distress System
- ▼ Message Transfer and Distribution System
- ▼ OMEGA
- ▼ Operations Information System
- ▼ Radio Communications Systems
- ▼ Search and Rescue Telephones
- ▼ Secure Command and Control Network
- ▼ Transportable Communications Centers
- ▼ Very High Frequency and Ultra High Frequency:

National Very High Frequency-Frequency Mode Distress System

- ▼ Vessel Traffic Services

Federal Highway Administration

- ▼ Federal Highway Administration Emergency Communications Systems

DEPARTMENT OF ENERGY

- ▼ Nuclear Emergency Search Team/Aerial Measuring System
- ▼ Secure Automatic Communications Network

DEPARTMENT OF VETERANS AFFAIRS

- ▼ Emergency Command and Control Radio Network
- ▼ Network Resource Information System
- ▼ Veterans Affairs High Frequency Emergency Radio Network
- ▼ Veterans Affairs Selective Signaling Voice Conference System

JOINT STAFF

(See Department of Defense)

GENERAL SERVICES ADMINISTRATION

- ▼ Aggregated Services Procurements
- ▼ Federal Telecommunications System 2000
- ▼ Federal Secure Telephone Service
- ▼ Washington Interagency Telecommunications System
- ▼ One Technical Support Contract
- ▼ One Hundred and Ninety-nine Regional Consolidated Local Centrex Service Arrangements
- ▼ One Hundred and Twenty-five Government-owned Local Service Arrangements
- ▼ Ten Purchases of Telephone Services Contracts

UNITED STATES INFORMATION AGENCY

- ▼ Voice of America

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

- ▼ National Aeronautics and Space Administration Operational Communications System
- ▼ National Aeronautics and Space Administration Program Support Communications Network
- ▼ National Aeronautics and Space Administration Tracking and Data Relay Satellite System

FEDERAL EMERGENCY MANAGEMENT AGENCY

- ▼ DEC VAX Computer Systems
- ▼ Emergency Broadcast System
- ▼ Emergency Education Network
- ▼ Federal Emergency Management Agency Facsimile and Record System
- ▼ Federal Emergency Management Agency Frequency Management System
- ▼ Federal Emergency Management Agency National Automated Message System
- ▼ Federal Emergency Management Agency National Radio System
- ▼ Federal Emergency Management Agency Secure Voice Program
- ▼ Federal Emergency Management Agency Switched Network
- ▼ Federal Emergency Support Capability
- ▼ Information Display System
- ▼ Local Area Network/Wide Area Network Development Project
- ▼ Mobile Air Transportable Telecommunications System

▼ National Warning System

NUCLEAR REGULATORY COMMISSION

▼ Emergency Notification System

UNITED STATES POSTAL SERVICE

▼ U.S. Postal Service Data Network

NATIONAL SECURITY AGENCY

(See Department of Defense)

**NATIONAL TELECOMMUNICATIONS
AND INFORMATION ADMINISTRATION**

(See Department of Commerce)



DEPARTMENT OF STATE (DOS)



MR. JOHN E. CLARK
COMMITTEE OF PRINCIPALS



MR. WILLIAM E. BISCHOFF
COUNCIL OF REPRESENTATIVES

This report is included as part of the CLASSIFIED
supplement to the FY93 NCS Annual Report.

DEPARTMENT OF THE TREASURY (TREAS)



MR. JAMES J. FLYZIK
COMMITTEE OF PRINCIPALS



MR. WILLIAM H. WUNDERLICH
COUNCIL OF REPRESENTATIVES



NS/EP TELECOMMUNICATIONS MISSION

The essential functions of TREAS requiring NS/EP telecommunications are summarized as follows:

- ▼ Protecting the President, Vice President, their families, and other dignitaries
- ▼ Managing the economic activities of the United States, including all monetary, credit, and financial systems
- ▼ Administering the laws pertaining to customs, taxes, alcohol, tobacco, and firearms
- ▼ Serving as principal economic advisor to the President
- ▼ Accomplishing international economic and monetary control as it pertains to the well-being of the Nation
- ▼ Manufacturing currency, coins, and stamps, and establishing methods of exchange.

TELECOMMUNICATIONS STAFF ORGANIZATION

TREAS telecommunications are managed through the Office of the Deputy Assistant Secretary for Information Systems, under the Assistant Secretary of the Treasury for Management. Under this office, the Director, Office of Telecommunications Management (OTM), oversees NCS liaison and NS/EP support activities. The Director, OTM, also provides management guidance and financial oversight to improve the Department's use of telecommunication systems. OTM ensures that TREAS bureaus have access to a cost-effective, technologically

sound telecommunications infrastructure so that the bureaus may carry out their missions. This is done through the exercise of program management authority over the telecommunication operational activities of the departmental offices and TREAS bureaus.

SIGNIFICANT ACCOMPLISHMENTS

TREAS realized the following NS/EP telecommunication achievements:

- ▼ Entered into a new phase of the Wireless and Radio Support Service (WRSS) program. The WRSS undertook an assessment of marketplace equipment and services that are available to support its strategic and tactical plans. Outreach to other Federal agencies, and State and local governments to coordinate wireless communications requirements was a principal program achievement. The WRSS program will achieve a Treasurywide migration to digital narrowband radio and address other wireless issues facing TREAS. Security of radio communications, a critical part of the wireless program, must also be achieved for the sensitive wireless communications exchanged by TREAS's bureaus, much of which is law enforcement related. Other key features and technologies of the TREAS wireless program include interoperability with other Federal, State, and local systems, cellular radio, wireless facsimile, and tactical wireless digital data communications, including wireless image transmission.
- ▼ Strengthened TREAS's telecommunication capabilities through enhancements to its management over-

sight of Federal Telecommunications System (FTS) 2000 Network B services. TREAS completed the planning and implementation of a significant event alert notification system for direct transmittal of network outage information from the FTS2000 service provider to TREAS bureaus. Plans were developed, approval obtained from the General Services Administration (GSA), and implementation was begun for an FTS2000 critical circuit diversity overlay using alternate carrier facilities. This will ensure the continuous operation of critical TREAS locations on the Consolidated Data Network (CDN) if FTS2000 network service is disrupted. It will also provide enhanced continuity of intercity switched telecommunication services and maintenance of survivability objectives.

- ▼ Continued expansion and implementation of the CDN, an encrypted, redundant data communications network, which is a significant enhancement to the Department's NS/EP capabilities. To enhance survivability of this critical network, the Executive Agent initiated a circuit diversity plan that would utilize facilities on FTS2000 Networks A and B. The Executive Agent also is developing Telecommunications Service Priority (TSP) restoration provisioning plans for the CDN. The departmentwide service includes the U.S. Customs Service; Internal Revenue Service; the Bureau of Alcohol, Tobacco, and Firearms; Financial Management Service; and departmental offices.
- ▼ Received bids in response to a request for proposal (RFP) for the Treasury Communications System (TCS). The TCS, a successor contract to the CDN, will provide communication services between TREAS locations, between TREAS and non-TREAS Government locations, and between TREAS and non-TREAS commercial locations in the continental United States, Alaska, Hawaii, Puerto Rico, Guam, the Virgin Islands, Bermuda, the Bahamas, and selected sites in Canada. The TCS RFP requires vendors to provide improved management and billing capabilities over the CDN, and technology

upgrades to prevent infrastructure obsolescence. These upgrades include improving connectivity and nationwide distribution; supporting physical circuits and wireless links; and offering the communications medium, many shared services, and common applications. The TCS is nearing completion of the evaluation process. The contract is scheduled for award in the first quarter FY94.

- ▼ Initiated a study with Sprint Corporation of ways to obtain diverse incoming access from FTS2000 Network B to the Treasury Digital Telecommunications System (DTS). The DTS is an all-digital, advanced technology local switching system that provides services to main TREAS and bureau locations in the Washington metropolitan area. DTS has multiple outgoing access routes to the FTS2000 network to enhance telecommunications survivability.
- ▼ Continued to support the OMNCS and to meet NCS support requirements specified in Executive Order (E.O.) 12472. TREAS continued to support the OMNCS by staffing a position in the National Coordinating Center for Telecommunications (NCC) with a full-time TREAS employee.
- ▼ Endorsed the OMNCS designation of a TREAS employee to serve on the TSP Oversight Committee. This will enable TREAS to participate in the development and implementation of TSP program enhancements in Federal, State, and local environments.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

The continuing development of a departmentwide telecommunications strategy, the expansion of the CDN, the further definition and outreach of the WRSS, and the acquisition of the TCS are ongoing activities that will significantly enhance the Department's NS/EP posture. TREAS became a member of the TSP Oversight Committee and will continue to participate in the TSP program. TREAS continues to actively par-

ticipate in the NCS Vision 21 planning process on the Major Focus Area II (Interoperability) team. Additionally, TREAS supported the Federal Telecommunications Standards Committee (FTSC) through the OTM, and the NCS Shared Resources (SHARES) High Frequency (HF) Interoperability Working Group through the U.S. Customs Service and OTM.



DEPARTMENT OF DEFENSE (DoD)



MR. JOHN GRIMES
COMMITTEE OF PRINCIPALS



MR. J. ROBERT ANDERSON
COUNCIL OF REPRESENTATIVES

NS/EP TELECOMMUNICATIONS MISSION

Under the provisions of E.O. 12472, DoD is assigned the following NS/EP telecommunication responsibilities:

- ▼ Provide, operate, and maintain the telecommunication services and facilities to support the National Command Authorities, and execute the responsibilities assigned by E.O. 12333, United States Intelligence Activities, December 4, 1981
- ▼ Ensure that the Director, National Security Agency (NSA), provides the technical support necessary to develop and maintain adequate plans for the security and protection of NS/EP telecommunications
- ▼ Execute the functions listed in Section 3(i) of E.O. 12472.

TELECOMMUNICATION STAFF ORGANIZATION

DoD includes the Office of the Secretary of Defense (OSD), the military departments and the services within them, the unified and specified commands, and other agencies established to meet specific United States military requirements. The NSA is a separate Agency within DoD that protects United States communications, produces foreign intelligence information, and provides computer security for DoD. The Defense Information Systems Agency (DISA) is a separate DoD Agency under the direction, authority, and control of the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (C3I). DISA responds directly to the Chairman, Joint

Chiefs of Staff (JCS), on operational matters and communication requirements associated with joint planning.

The principal staff positions concerned with NS/EP telecommunications in the OSD are the Under Secretary of Defense for Policy and the Assistant Secretary of Defense (ASD) for C3I. Command, Control, and Communications (C3) systems are the concern of a directorate of the Joint Staff (JS).

SIGNIFICANT ACCOMPLISHMENTS

DoD completed the transfer of certain telecommunication requirements to the GSA-managed program known as FTS2000 in compliance with appropriate statutes and regulations.

Defense Switched Network (DSN)

- ▼ Deactivated the last remaining Automated Voice Network (AUTOVON) 490L switch in Europe (Mount Vergine, Italy).
- ▼ Achieved Initial Operational Capability (IOC) for network management in Europe. Four of the five server terminals for the network arrangement are fielded.
- ▼ Reconfigured the DSN in Europe consistent with the military departments' force reductions.
- ▼ Upgraded Finegayan, Guam, DSN switch to a super node.

Defense Message System (DMS)

- ▼ DISA, in response to January 1993 ASD (C3I) guidance, appointed a DMS Program Manager who will

manage the DoD-wide DMS Government Open Systems Interconnection Profile (GOSIP) infrastructure acquisition. To support this effort and the significant funding required, the DMS Program Manager has developed a DMS-GOSIP Infrastructure Acquisition Business Plan, which was submitted for approval in September 1993.

- ▼ The DMS Component Approval Process (CAP), based on lessons learned from its first implementation in 1992, was updated and a new version issued by DISA on March 24, 1993. The DMS CAP provides programmatic, functional, and security procedures for obtaining approval for DMS projects and for deployment of DMS components.
- ▼ DISA initiated a Joint Staff action to establish Chairman, Joint Chiefs of Staff (CJCS), policy for the DMS in general and for the DMS CAP in particular that resulted in the issuance of CJCS Instruction (CJCSI) 5721.01 on June 28, 1993. This CJCSI replaced CJCS Memorandum of Policy (MOP) #14, which defined Automatic Digital Network (AUTODIN) policy, and reflected the inclusion of the AUTODIN as a baseline component of the DMS.
- ▼ The DMS Test and Evaluation Master Plan (TEMP) was approved by OSD in January 1993 after having been approved by all DoD service/agency DMS participants. This action reflects the maturation of the DMS program and the acceptance of its validity at the highest level of test and evaluation authority in OSD.
- ▼ Completed software acceptance testing and then deployed new hardware and software (version E-17) composing the Continental United States (CONUS) AUTODIN DMS Transition Project. This project provided both cost savings and a CONUS AUTODIN life extension to permit AUTODIN switches to operate until phased out by the new DMS technology.
- ▼ The Joint Pentagon DMS Transition Plan (JPDTP)

project was approved by the DMS Panel in April 1993 as a DMS central project. The Army will develop this plan for a Pentagon messaging infrastructure that will meet DMS architectural and interoperability requirements.

- ▼ The Message Preparation Directory (MPD) system was approved by the DMS Panel in June 1993 as a DMS central project. The Army will develop required hardware and software components to provide automation of current paper documents, the Message Address Directory (MAD), and the Allied Communications Publication (ACP) 117. The MAD and ACP-117 Plain Language Address (PLA) and Routing Indicator (RI) information needed to route AUTODIN messages will be electronically accessible by message originators.
- ▼ The Armed Forces Communications and Electronics Association-sponsored DMS symposium on April 8, 1993, was a huge success with more than 500 industry and Government personnel in attendance. The symposium provided a unique forum in which DMS requirements, architecture, security mechanisms, and acquisition strategy were discussed.
- ▼ The Required Operational Messaging Characteristics (ROMC) was validated by the Joint Staff in May 1993.
- ▼ The DMS-GOSIP Acquisition team produced and distributed two Requests for Information (RFI) to industry. Industry's replies were analyzed and used to help formulate the overall acquisition strategy. A draft RFP is planned for release this fall.
- ▼ A DMS Business Plan was produced to support acquisition of the DMS-GOSIP Infrastructure. The components that compose the DMS-GOSIP infrastructure will be used by DoD services, DoD agencies, and other authorized organizations to support writer-to-reader messaging on a worldwide basis.
- ▼ The ACP 123 (final draft), "Common Messaging Strategy and Procedures," is being reviewed by the services and agencies, and Joint Staff validation is

expected this fall. This action culminates a 3-year effort in support of the U.S. Military Communications Electronics Board and the Combined Communications Electronics Board.

Defense Satellite Communications System (DSCS)

- ▼ Continued to sustain the space segment Super High Frequency (SHF) capability through the timely launch of one DSCS III satellite to replace aging elements of the DSCS constellation and the acquisition of DSCS follow-on satellites consistent with the approved Military Satellite Communications (MILSATCOM) architecture.
- ▼ Continued planning and implementation of the Integrated Digital Network Exchange (IDNX) as the standard smart multiplex that will allow integration of the DSCS with terrestrial communication networks.
- ▼ Developed and initiated the implementation of a Standard Tactical Entry Point (STEP) System for tactical SHF users including Navy ship-to-shore communications.
- ▼ Activated the DSCS Operational Control Center (DSCSOC) at Fort Buckner, Japan. Fort Buckner became the fifth DSCSOC, replacing Clark Air Force Base, Republic of the Philippines, which was closed in 1991 because of the Mount Pinatubo eruption.
- ▼ Continued to add more DSCS satellite terminals to U.S. Navy ships as part of the QUICKSAT program.

Jam Resistant Secure Communications (JRSC)

The JRSC Program provides end-to-end survivable communications in both a nuclear scintillated and electronically jammed environment. It supports the National Command Authority, Commanders-in-Chief (CINC), and deployed military commanders by providing critical decision-making voice conferences and

data transfer via the Integrated Tactical Warning/Attack Assessment (ITW/AA) network, the Secure Survivable Communications Network (SSCN), and survivable and enduring Commanders-in-Chief Network (CINCNET). The JRSC realized the following achievements:

- ▼ Continued the implementation for the Distributed MILSATCOM Conferencing (DMC) Project to serve the SSCN with voice and data coordination circuits between missile warning sensors and correlation centers.
- ▼ Completed the Phase II upgrade of 28 existing satellite terminals with anti-jam modem equipment for mitigation of nuclear effects. An additional two units will be modified in Phase III.
- ▼ Initiated implementation of the Survivable Communications Integration System (SCIS) "fall back" plan as part of the ITW/AA program.
- ▼ Initiated the satellite earth terminal (AN/GSC-49) upgrade to incorporate fiber optics for High-Altitude Electromagnetic Pulse (HEMP) improvements.

Defense Communications System (DCS) Terrestrial Transmission

- ▼ DISA is continuing to implement T-1's under the circuit bundling program and smart multiplexers in the Defense Information Systems Network Near Term (DISN-NT) to realize immediate cost savings to its customers as directed by Defense Management Report Decision (DMRD) 968. DISA is taking full advantage of competitive pricing in commercial satellite and fiber optic cable facilities in providing users with diversity, reliability, responsiveness, and significant cost savings. There is an effort to establish a T-3 Network in CONUS to meet increasing telecommunication demands and broadband requirements, and to consolidate costly long-haul leases. The initial DCTN T-3 network backbone will consist of six nodes and six T-3 trunks and will be implemented in FY94. The first T-3 was operational on March 30, 1993.

- ▼ Coordinated the installation of more than 50 IDNX smart multiplexers at CONUS and overseas locations. This action will facilitate full integration of the Defense Information Systems Network (DISN) transmission layer.
- ▼ The CONUS Circuit Bundling Project provides satellite and fiber optic cable T-1 connectivity as required in CONUS to economically bundle existing leased services. This action has been rolled into the DISN-NT effort and is being implemented as required. The focus of the effort is to integrate the Navy Network (NAVNET), Air Force Network (AFNET), Streamlining of Information Services Operations Consolidation Study (SISOCS), Marine Corps Data Network (MCDN), and the Defense Logistics Agency Communications Network (DLA DCN) bundling efforts.
- ▼ The European DCS, as part of DCS Spain/Italy Reconfiguration (DSIR), installed IDNX smart multiplexers in Spain, Italy, England, and Germany. DSIR will provide digital bulk encrypted transmission service via leases, U.S. Government-owned terrestrial, and DSCS links between major DCS facilities. Installed a network management system to support the presence of IDNX's in theater. Activated leased links in Spain and Italy to support the deactivation of 486L troposcatter system. Two trans-Atlantic T-1's were activated and two other trans-Atlantic T-1's are scheduled for recompetition in FY94. The DCS Mediterranean Improvement Program (DMIP) was completed in January 1992 with the activation of commercial leased communications within and outside Turkey. The activation of DSIR and the deactivation of all DCS facilities within Greece have left only seven Turkey DCS transmission facilities remaining in DMIP. Steps have been initiated to change Turkey's out of country connectivity from leased terrestrial transmission media to commercial satellite communications. Currently, host nation approval is being sought for the changes to the DCS within Turkey. About 100

links of the Digital European Backbone (DEB) are now operational, but base closures are reducing their numbers each month. There are presently 13 DEB I links, all within Italy, pending an upgrade to the standard DEB II configuration used throughout the remainder of Europe. This upgrade should be completed by December 1994, and will provide a capability that will reduce the amount of leased service required in Italy.

- ▼ All DCS HF Long-Haul point-to-point HF links are being reviewed to eliminate those that are no longer required. To date, seven links have been reviewed and six disestablished. These links were in the U.S. European Command (USEUCOM) and U.S. Atlantic Command (USCINCLANT) areas. A review of Pacific HF links will be conducted in FY94.
- ▼ All HF Upgrade Programs have been held in abeyance pending release of the Joint Staff HF Mission Area Review (MAR). MAR completion is expected in October 1993. The DISA HF programs will most likely be restructured based on the MAR recommendations, base closure actions, and service drawdowns.

Defense Red Switch

- ▼ Completed a business case study that recommended the network migrate to a single switch type.
- ▼ Completed the cutover of the red switches at the Pentagon, National Management Communications Command (NMCC), and Pacific Air Force headquarters.
- ▼ Began refurbishment of red switches for installation at USEUCOM, USCINCLANT, U.S. Pacific Command (USCINCPAC), Site-R, U.S. Forces Command (FORSCOM), Yokota Army Base (Japan), Elmendorf Air Force Base (Alaska), and Kadena Army Base (Japan).
- ▼ Ported the Joint Staff Worldwide Secure Voice Conferencing System (SVCS) as a preset conference to the new red switch platform.

- ▼ Expanded the scope of the Defense Red Switch Program at JCS direction, February 11, 1992, to include more than 50 locations as part of the network. This network is expected to evolve into a global network.

Telecommunications Provisioning

- ▼ Reduced recurring leased communications costs on the Defense Data Network (DDN) backbone by \$10 million per year. Savings originated from a variety of DISA Telecommunications Certification Office (TCO) initiatives that improved the quality of service while reducing DISA costs and made the maximum use of the DCS transmission.
- ▼ Reduced recurring leased communications costs in support of DISA requirements by \$1 million per year. Savings originated from the review and revalidation of existing services, which resulted in either re-awarding or discontinuing existing leased services.
- ▼ Activated the first year option to the new provisioning contract in support of Headquarters (HQ) DISA, DISA Europe, DISA Pacific, and DISA Telecommunications Management and Services Office (TMSO) in support of Telecommunications Service Requests (TSR)/Telecommunications Service Orders (TSO) provisioning efforts. This action will result in contractor work of 43,500 DCS TSR/TSO actions. A total of 26,000 TSR's/TSO's under the new provisioning contract in support of HQ DISA, DISA Pacific, DISA Europe, and DISA TMSO were processed.
- ▼ Completed the certification of the TSP program in support of DISA requirements, AUTODIN, and DLN backbone.
- ▼ Developed and published communications service orders establishing the Advanced Research Projects Agency's (ARPA) domestic and international wide-band communications network.
- ▼ Revised the DISA Worldwide Geographical Locations (GEOLOCO) to recognize the changes

taking place in Russia, Germany, and other parts of Europe. Also, revised more than 500 GEOLOCO's that were improperly identified in the Worldwide On-Line System (WWOLS) data base. This information is necessary to DoD and military units to designate and accurately determine the location of temporary and permanent communications facilities.

- ▼ Assisted various Government organizations in preparing TSR's to gain access to the International Marine Satellite (INMARSAT) contract administered by the Defense Commercial Communications Office. This effort reduced the Government's cost of these commercial satellites from more than \$11.00 to under \$7.00 per minute.

Defense Information Systems Network

- ▼ The DISN-NT Security Architecture was approved by the Assistant Secretary of Defense (C'D) on January 19, 1993, and initial funding was provided for implementation.
- ▼ The Secure Tactical Data Networking demonstration number four was supported with the deployment of a proof-of-concept gateway configuration at Wahiawa, Hawaii, to support tactical to strategic data communications for both UNCLASSIFIED and SECRET traffic.

DEPARTMENT OF JUSTICE (DOJ)



MR. ROGER M. COOPER
COMMITTEE OF PRINCIPALS



MR. DONALD E. JOSEPHS
COUNCIL OF REPRESENTATIVES



NS/EP TELECOMMUNICATIONS MISSION

The NS/EP telecommunications mission for DOJ is to provide telecommunication facilities and services in support of DOJ NS/EP essential functions. The NS/EP responsibility is centralized in the Justice Management Division for all department entities except the Federal Bureau of Investigation (FBI) and the Drug Enforcement Administration (DEA). These bureaus maintain separate secure network facilities.

TELECOMMUNICATIONS STAFF ORGANIZATION

The Telecommunications Services Staff (TSS) under the Deputy Assistant Attorney General for Information Resources Management (IRM) operates and manages DOJ's message processing system and the Telecommunications Service Center. TSS also provides networking and technical assistance to DOJ's offices, boards, and divisions. Secure message transmission is offered through separate facilities. The Emergency Planning Group and the Information Security Policy Group of the Security and Emergency Planning Staff manage the Secure Telephone Unit (STU) program for all DOJ organizations (except FBI and DEA).

SIGNIFICANT ACCOMPLISHMENTS

DOJ realized the following NS/EP telecommunication achievements:

- ▼ Provided staffing support to the OMNCS with a full-time DOJ employee to meet its NCS support requirements specified in E.O. 12472.
- ▼ The Department and its Bureaus (DEA, FBI, and the

Immigration and Naturalization Service (INS)) participated in SHARES HF radio exercises. These SHARES exercises offered participating Federal departments and agencies the opportunity to develop and improve skills for passing NS/EP traffic. A mix of departmental HF radio stations, with and without prior SHARES experience, participated in the exercises.

- ▼ DOJ continued its active participation in the NCS activities of the COP/COR.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

The following current/ongoing activities support NS/EP objectives:

- ▼ TSS provides operational telecommunication services by managing, engineering, and operating the DOJ nationwide data telecommunication systems serving all DOJ offices except the FBI.
- ▼ DOJ's active participation in the FTSC standards process continues to promote interoperability of telecommunication services and to strengthen NS/EP communications.
- ▼ DOJ continues its active support of the SHARES HF Radio Program.
- ▼ DOJ continues its active support of the Communications Interoperability Working Group.
- ▼ DOJ continues its active support of the FTSC's HF Radio Subcommittee and the Standards Development Working Group, the Statement of Requirements Working Group, and the Test and

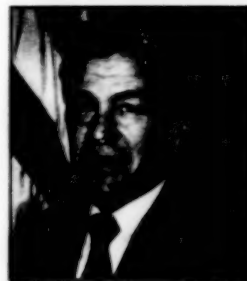
Evaluation Working Group.

- ▼ DOJ is participating in the White House Communications Interoperability Working Group, which is chartered to conduct studies and make recommendations concerning the interoperability of telecommunications between the White House Communications Agency (WHCA) and other agencies and organizations in the Federal Government.
- ▼ DOJ continues its participation in the TSP program and related NS/EP initiatives.

PENDING ISSUES

- ▼ Review of DOJ telecommunications staffing constraints with expanded NCS activities and work loads.

DEPARTMENT OF THE INTERIOR (DOI)



MR. JAMES P. JADOS
COMMITTEE OF PRINCIPALS



MR. JAMES E. DOLEZAL
COUNCIL OF REPRESENTATIVES



NS/EP TELECOMMUNICATIONS MISSION

Few telecommunication assets are identified in support of NS/EP objectives because the Agency's primary mission is to efficiently manage natural resources. Radio equipment from the Boise National Fire Center is available for emergency support and is jointly used by the U.S. Department of Agriculture.

TELECOMMUNICATIONS STAFF ORGANIZATION

Telecommunications program management resides at both the departmental and bureau levels. The Telecommunications Systems Division, Office of IRM, has departmentwide responsibilities. Bureau telecommunication managers and their staff are responsible for communications operational support. The Telecommunications Systems Division coordinates the sharing and acquisition of telecommunication facilities, equipment, and services; prepares departmental policy and strategic telecommunication plans; approves system procurement and installation actions; serves as liaison with GSA, the National Telecommunications and Information Administration (NTIA), and the NCS; provides technical assistance to bureaus and offices; and either reviews or develops specifications and solicitation documents for obtaining the services or facilities required by bureaus and offices.

SIGNIFICANT ACCOMPLISHMENTS

A departmentwide cell switched backbone network (DOINET) was installed using FTS2000 AT&T transmission services. The network, under contract to Sprint, primarily supports Geological Survey requirements, but

is being rapidly expanded to serve all bureaus.

Electronic mail (E-mail) X.400 gateways were installed to interconnect the largest bureaus of the Department.

PENDING ISSUES

Departmental reliance and emphasis on information resources continue to grow. The development of new functional applications, enhancement of existing systems, and the redesign and replacement of obsolete systems all reflect this growth. Despite necessary budget and personnel constraints, technology advances will continue to be exploited to further increase productivity. Continued improvement in management and use of information resources must be supported by applying new data management techniques.

Expansion of DOINET services and the use of digital telephone systems, local area networks, and land mobile communications are critical to departmental operations.



UNITED STATES DEPARTMENT OF AGRICULTURE (USDA)



DR. JOHN L. OKAY
COMMITTEE OF PRINCIPALS



MR. ROBERT D. JOHNSON
COUNCIL OF REPRESENTATIVES

NS/EP TELECOMMUNICATIONS MISSION

The USDA has several essential functions requiring NS/EP telecommunications.

- ▼ Provide the domestic distribution of seed, livestock, poultry feed, fertilizer, and farm equipment
- ▼ Manage the use of lands and facilities under USDA jurisdiction
- ▼ Direct the rural fire control activities regarding national forests in coordination with local authorities
- ▼ Inspect livestock and poultry, and the products thereof, to ensure safety and wholesomeness
- ▼ Implement plans using water in food production and processing.

TELECOMMUNICATIONS STAFF ORGANIZATION

Although there is no formal organization within the USDA dedicated to NS/EP telecommunications support, policy and expertise on NCS matters are provided by the Office of IRM as required and as a collateral duty.

Telecommunications management resides at the department and agency level. The Telecommunications Policy Division has departmentwide responsibilities that include representing departmental interests in Governmentwide activities, such as acting as a liaison to the GSA and NCS.

The Telecommunications Policy Division is responsible for providing departmental telecommunications policy and guidance; supporting USDA and Governmentwide telecommunication programs; devel-

oping and maintaining departmental long-range telecommunication plans; implementing telecommunication standards and security programs; conducting agency reviews; and evaluating the implementation of telecommunication policies, standards, and long-range plans.

SIGNIFICANT ACCOMPLISHMENTS

USDA realized the following NS/EP telecommunication accomplishments:

- ▼ Reviewed and updated the USDA Office of Emergency Programs and the Office of IRM policy guidance from the telecommunications perspective.
- ▼ Reviewed a departmentwide NS/EP telecommunications survey supporting essential emergency functions (EEF).
- ▼ Reviewed and streamlined the staffing coordination process by developing procedures for improved responsiveness to the needs of the Manager, NCS.
- ▼ Identified new requirements for the STU-III. Participated with the NSA in a communications security review.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

- ▼ Participate in COP/COR, and attend the President's National Security Telecommunications Advisory Committee (NSTAC), and its Industry Executive Subcommittee (IES)
- ▼ Represent USDA as an NCS member organization in Manager, NCS, activities

-
- ▼ Participate in the SHARES HF Radio Program, the Communications Resources Information Sharing Program (CRISP), the Meteor Burst Communications (MBC) Standards Working Group, and Federal Wireless User's Forum (FWUF)
 - ▼ Support the Diplomatic Telecommunications Service
 - ▼ Participate in the NCS NS/EP Telecommunications Planning Process Subcommittee (TPPS), Interoperability Radio Working Group, the FTSC, and other working group activities as necessary
 - ▼ Process new requirements for STU-III's
 - ▼ Evaluate implementation of the Government Emergency Telecommunications Service (GETS) telecommunication policies
 - ▼ Participate in the NCS Vision 21/Total Quality Management (TQM) process to assist the Administration in the National Information Infrastructure (NII) and ensure that the Federal Government has the telecommunication services needed during emergencies.
-

PENDING ISSUES

- ▼ Monitor long-term approved methodology for funding by which the Manager, NCS, telecommunication initiatives are to be funded and implemented (i.e., funding of the National Level NS/EP Telecommunications Program [NLP])
 - ▼ Participate in developing and implementing the TSP system, which replaced the restoration priority system, and related NS/EP initiatives
 - ▼ Review USDA telecommunication resources and staffing constraints with expanded NCS activity and work load
 - ▼ Monitor GETS for its impact on USDA
 - ▼ Monitor STU-III communications security (COMSEC) and USDA requirements to implement the NLP.
-



DEPARTMENT OF COMMERCE (DOC)



MR. THOMAS W. ZETTY
COMMITTEE OF PRINCIPALS



MR. JEROME T. GIBBON
COUNCIL OF REPRESENTATIVES

NS/EP TELECOMMUNICATIONS MISSION

DOC is the chief organization in the Federal Government responsible for the commercialization of trade, and its impact on commodities, invention, and technology. The DOC maintains a strong position in the analysis of economic trends through census, business, and standards information. The DOC role in technology also involves gathering, monitoring, and analyzing environmental data to report weather, oceanic, and other geophysical information that is considered sufficiently critical to require early warning of expected emergencies.

The above functions are DOC key responsibilities and involve several organizational missions that are ongoing during national security emergencies. These missions and functions are supported by the NLP and agency-level NS/EP telecommunication services and are performed during the three identified NS/EP stress periods — peacetime, crisis and mobilization, and late trans-attack and early post-attack (LTA/EPA).

The key responsibilities during national security emergencies require DOC to implement plans during peacetime, and activate planned controls during the crisis/mobilization and LTA/EPA periods. E.O. 12656 establishes the DOC emergency preparedness functions identified in Items 1 through 13 below, while E.O. 12472 specifies items 14 and 15.

(1) Develop control systems for priorities, allocation, production, and distribution of materials and other resources that will be available to support both national defense and essential civilian programs in a national

security emergency. Control the production and distribution of all manufactured goods and processed materials.

Agency-Related Activities: International Trade Administration (ITA), Bureau of Export Administration (BXA), and Economic and Statistics Administration (ESA) programs

(2) Identify those industrial products and facilities that are essential to mobilization readiness, national defense, or post-attack survival and recovery, in cooperation with the DoD and other departments and agencies. Control the use of all production facilities except those of DoD and the Department of Energy (DOE).

Agency-Related Activities: ITA, BXA, and ESA programs

(3) Analyze potential effects of national security emergencies on actual production capability, taking into account the entire production complex, including shortages of resources, and develop preparedness measures to strengthen capabilities for production increases in national security emergencies in cooperation with the DoD and other departments and agencies. Control all construction materials and the furnishing of basic industrial services (except those under the jurisdiction of DOE, USDA, NCS, Federal Communications Commission [FCC], the Department of Health and Human Services [DHHS], DoD, Federal Aviation Administration [FAA], Department of Transportation [DOT], and DOI).

Agency-Related Activities: ITA, BXA, and ESA programs

(4) Perform industry analyses to assess capabilities of the commercial industrial base to support the national defense, and develop policy alternatives to improve the international competitiveness of specific domestic industries and their ability to meet defense program needs in cooperation with DoD. In addition, DOC implements the Machine Tool Order Program to meet defense requirements.

Agency-Related Activities: ITA, BXA, and ESA programs

(5) Develop plans for providing emergency assistance to the private sector through either direct or participation loans for the financing of production facilities and equipment in cooperation with the Department of the Treasury. Implement emergency assistance programs essential to small businesses in coordination with the Small Business Administration.

Agency-Related Activities: ITA, BXA, and ESA programs

(6) Prepare plans to regulate and control exports and imports in national security emergencies in cooperation with DOS, DoD, DOT, and TREAS. Regulate and control exports and imports.

Agency-Related Activities: ITA and BXA programs

(7) Provide for the collection and reporting of census information on human and economic resources, and maintain a capability to conduct emergency surveys to provide information on the status of these resources as required for national security purposes. Implement emergency plans regarding census functions, and coordinate services essential to Federal agencies regarding census data.

Agency-Related Activities: Census Bureau programs

(8) Provide overall plans and programs to ensure that the fishing industry continues to produce and process essential protein in national security emergencies. Control fishing industry activities for protein production.

Agency-Related Activities: National Oceanic and Atmospheric Administration (NOAA)/National Marine Fisheries Service (NMFS) programs

(9) Develop plans to provide meteorological, hydrologic, marine weather, geodetic, hydrographic, climatic, seismic, and oceanographic data and services to Federal, State, and local agencies, as appropriate. Coordinate scientific and technological services essential to Federal departments and agencies, particularly: meteorological and related services, map and related data production for non-DoD purposes, standards activities, and census data. Perform functions that may involve monitoring potential radiological hazards, including weather forecasting, geodetic, hydrographic, climatic, seismic, and oceanographic data.

Agency-Related Activities: Technology Administration (TA), National Institute of Standards and Technology (NIST); ESA; NOAA, National Weather Service (NWS) programs

(10) Represent the United States in industry-related international (North Atlantic Treaty Organization [NATO] and allied) civil emergency preparedness planning and related activities in coordination with DOS and the Federal Emergency Management Agency (FEMA).

Agency-Related Activities: ITA and BXA programs

(11) Assist DoD in formulating and carrying out plans for stockpiling strategic and critical materials.

Agency-Related Activities: ITA, ESA, and BXA programs

(12) Support USDA in planning for the national security management, production, and processing of forest and fishery products.

Agency-Related Activities: ITA, BXA, and NOAA/NMFS programs

(13) Assist TREAS in the formulation and execution of economic measures affecting other nations in consultation with DOS and DoD.

Agency-Related Activities: ITA and ESA programs

(14) Develop plans and procedures concerning radio spectrum assignments, priorities, and allocations for use by Federal departments, agencies, and entities in national security emergencies. Manage the Federal Government's share of radio spectrum.

Agency-Related Activities: NTIA programs

(15) Develop, maintain, and publish policy, plans, and procedures for the control and allocation of frequency assignments, including the authority to amend, modify, or revoke such assignments in those parts of the electromagnetic spectrum assigned to the Federal Government in national security emergencies. Control the allocations of frequency assignments.

Agency-Related Activities: NTIA programs

TELECOMMUNICATIONS STAFF ORGANIZATION

The principal DOC organizations performing the above functions that rely on NS/EP telecommunications support are NTIA; NIST as part of TA, ESA, BXA, ITA; the Census Bureau as part of Economic Affairs (EA); the Patents and Trademarks Office (PTO); and NOAA, which includes the NWS, the Office of Oceanic and Atmospheric Research (OAR), the National Environmental Satellite Data and Information Service (NESDIS), the National Oceanic Service (NOS), and the NMFS (see Exhibit 4-1).

SIGNIFICANT ACCOMPLISHMENTS

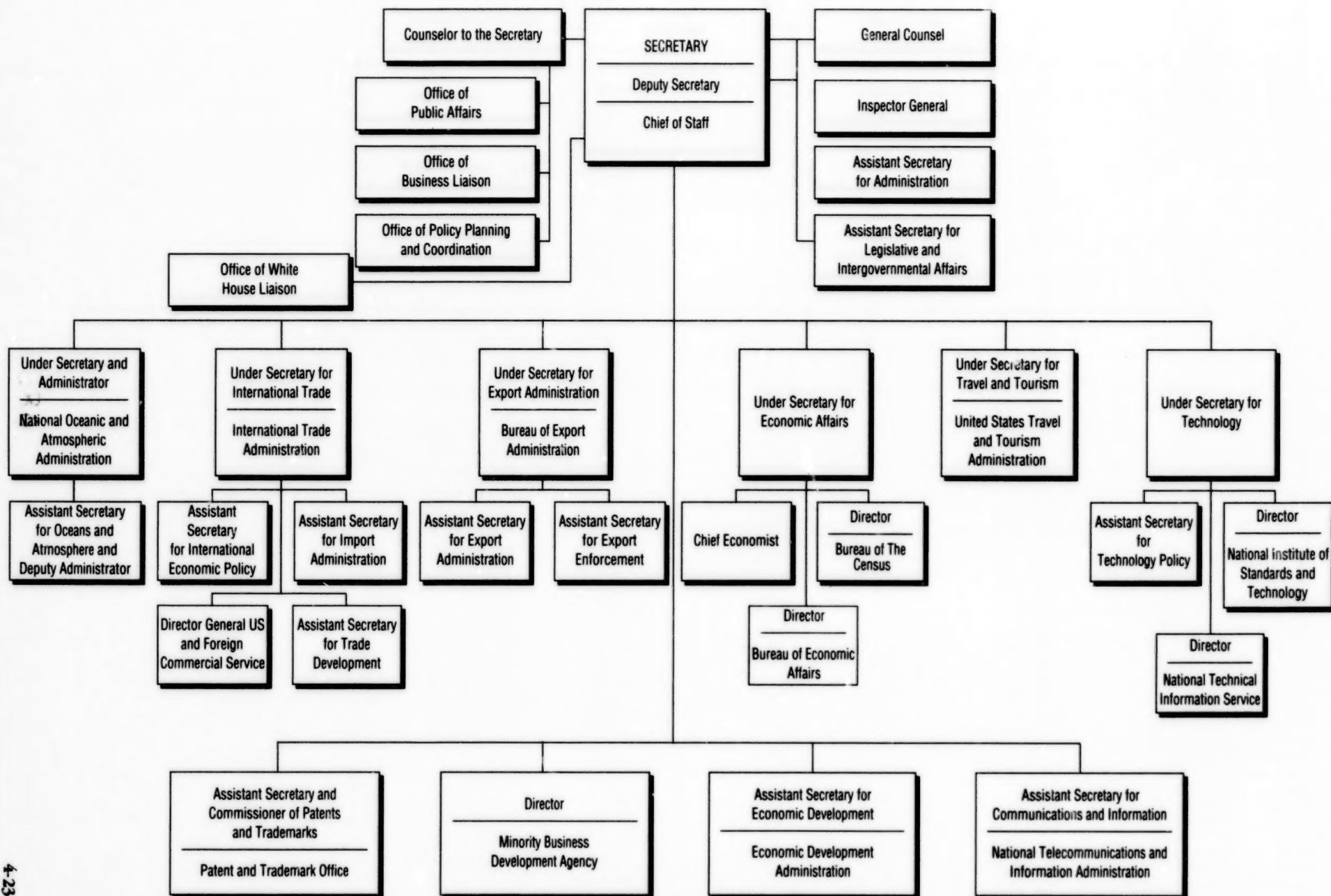
The DOC key organizations continue to make significant strides in achieving support for the previously listed emergency preparedness functions by providing communication resources vital to the flow of mission-related information. These accomplishments are listed below.

- ▼ NTIA implemented a computer-based program that facilitates coordination of emergency broadcast information among the FCC, FEMA, and NTIA.
- ▼ NTIA implemented a new radio communication and spectrum management system with enhanced computer capability to analyze Federal spectrum use and allocations, complementing Government Master File data distributed to departments and agencies via compact disk.
- ▼ NTIA implemented a new broadband link between its Annapolis, Maryland, facility and the Washington, DC, office for direct access to its computer processing capability.
- ▼ NIST linked its backbone data network over the FTS2000 and the Department's WAN via gateways to local networks at Gaithersburg, Maryland, and Boulder, Colorado.
- ▼ ITA continued to enhance its links into DOS networks for processing domestic and foreign commercial information.
- ▼ ITA implemented links into the new independent states (NIS) of Russia for processing domestic and foreign commercial information to enhance United States trade with the NIS.
- ▼ The Census Bureau upgraded its gateway to the Department network for connecting its nationwide operating facilities to the FTS2000 data network and implementing redundant links for support of statistical data collection and processing.
- ▼ The Census Bureau continued to upgrade its nationwide telecommunications network to accom-

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EXHIBIT 4-1
U.S. Department of Commerce Organizational Chart



moderate high-speed file transfers to support statistical data collection and dissemination.

- ▼ NOAA/NWS continued to upgrade its networks using FTS2000 links to support connectivity at the National Severe Storms Forecast Center for high-speed transfer of forecast data.
- ▼ NOAA/NMFS continued to implement its new network over FTS2000 to support connectivity between four National Marine Fisheries Service computing centers and regional field locations providing high-speed access to fisheries management information.
- ▼ NOAA/NWS continued to implement new satellite services to disseminate warnings, forecasts, and data to international countries for use in transportation.
- ▼ DOC headquarters continued to enhance its automated telecommunications management system capability to manage departmentwide voice and data communication systems.
- ▼ DOC headquarters continued to enhance the departmental data backbone network to improve the information flow among the field administrative offices and department data centers with links over FTS2000.
- ▼ DOC converted three major facilities in the Washington metropolitan area to enhanced digital switching to provide enhanced voice/data communications accesses.
- ▼ NOAA/NWS is implementing its telecommunication facilities to transfer weather data under the new next generation weather radar program.
- ▼ NOAA/NWS implemented its telecommunication facilities to use international weather satellite information as a backup to the domestic service through a bent-pipe agreement with the European countries, thus decreasing the risk of losing a source of weather observations data.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

DOC operating units are continuing to upgrade and expand several departmentwide telecommunication services for the transfer of essential information to support their missions/functions.

- ▼ NTIA is continuing to implement a computer-based management information system for its emergency spectrum management activities, updating plans for a real-time capability.
- ▼ NIST is implementing several Open Systems Interconnection (OSI) networks and related standards for the communications of scientific information using new technology, such as integrated services digital network (ISDN) and fiber optics to provide integrated computing and information exchange.
- ▼ ITA is continuing to implement new networks to enhance the flow of information to support the Trade Policy Information System.
- ▼ ITA is expanding the implementation of international communications services to foreign countries where ITA commercial services offices are located.
- ▼ NOAA/NWS is continuing to upgrade its telecommunication facilities that support the collection and distribution of weather data among field weather observation offices, which are tasked to rapidly disseminate public warnings and forecasts.
- ▼ NOAA/NWS is implementing its capability to transfer, via digital facsimile using satellite communication services, aeronautical weather maps to airports and pilots.
- ▼ NOAA/NWS is completing the design of an upgraded telecommunications capability to enhance advanced weather interactive processing systems.
- ▼ NOAA/NESDIS is upgrading its telecommunication networks to transfer environmental data throughout the North American continent.

- ▼ NOAA/NESDIS is continuing to implement an international communications capability to allow the gathering and processing of weather observation data from internationally available satellites.
- ▼ NOAA/NOS is continuing to implement a capability to create and disseminate digital aeronautical data in an entirely electronic format.
- ▼ NOAA/NOS is continuing to implement its ship-board communications services with more reliable ship-to-shore satellite telecommunication services.
- ▼ NOAA/NWS is continuing to enhance its use of doppler radar as an effective weather information gatherer under the wind profiler program, and is implementing a communications platform to improve weather information collection and monitoring.
- ▼ DOC offices are continuing to upgrade communications services to accommodate better voice and data communications services using the aggregated switch services program and electronic key systems.
- ▼ DOC offices are continuing to upgrade users' E-mail access to the Internet and FTS2000; more gateways were implemented for expanded access within the Department.

DOC relies on the use of Governmentwide communications services, where possible, to support the communication of information during peacetime and emergencies. In most cases, DOC agencies have shifted to GSA-provided FTS2000 services for long distance voice communications and to the GSA local services program for intracity voice communications. The trend over the last 5 years is to shift toward aggregated voice-grade communications services and dependence on service providers for emergency periods.

The dependence on data communications services is now also moving toward GSA-provided data networks. The move of data services toward aggregated Government services can be expected to increase in the future toward the FTS2000 programs. DOC scien-

tific missions, such as satellite and earth sensing technology, will most likely remain as independently provided communications networks.



DEPARTMENT OF HEALTH AND HUMAN SERVICES (DHHS)



DR. NEIL J. STILLMAN
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MR. FRANK J. CAMPBELL
COUNCIL OF REPRESENTATIVES

NS/EP TELECOMMUNICATIONS MISSION

DHHS has several essential functions requiring NS/EP telecommunications.

- ▼ Mobilize the health industry and health resources in national security emergencies
- ▼ Promote State and local programs for the provision of health, mental health, and medical services in national security emergencies
- ▼ Allocate health, mental health, and medical service resources among civilian and military claimants
- ▼ Reduce or eliminate adverse health and mental health effects produced by hazardous agents (biological, chemical, and radiological)
- ▼ Assist State and local governments in rehabilitating persons injured or disabled during national security emergencies.

TELECOMMUNICATIONS STAFF ORGANIZATION

Telecommunications program management is a departmental and operating division function. The Assistant Secretary for Management and Budget (ASMB) has overall departmental responsibility for telecommunications policy and management. The DHHS operating divisions are responsible for the acquisition and operation of telecommunication services and facilities to satisfy their programs' mission requirements. Also, there is a telecommunications planning and operation function in the Office of Emergency Preparedness, Assistant Secretary for Health.

SIGNIFICANT ACCOMPLISHMENTS

DHHS realized the following NS/EP telecommunication achievements:

- ▼ Provided staffing support to the OMNCS with a full-time employee to meet its NCS support requirements specified in E.O. 12472
- ▼ Participated in SHARES HF radio exercises
- ▼ Activated SHARES HF stations during Hurricanes Andrew and Emily
- ▼ Participated in the Vision 21/TQM process
- ▼ Participated in the OMNCS/NIST Federal Wireless Users Forum
- ▼ Deployed and utilized National Transportable Telecommunications Capability (NTTC) during Hurricane Andrew.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

- ▼ Participate in COP/COR, the NSTAC, and its IES
- ▼ Participate in developing the CRISP
- ▼ Participate in developing interagency interoperability for computers and communications
- ▼ Represent DHHS as an NCS member organization in Manager, NCS, activities
- ▼ Develop a DHHS TSP policy and procedures circular

- ▼ Evaluate lessons learned during Hurricane Andrew to identify NS/EP telecommunication requirements
- ▼ Participate in developing interagency interoperability for computers and communications.

PENDING ISSUES

The OMNCS is assisting the Office of Emergency Preparedness/National Disaster Medical System (NDMS), Office of the Assistant Secretary for Health, in developing a comprehensive communications architecture to support NDMS elements, Medical Support Unit, and Disaster Medical Assistance Teams.



DEPARTMENT OF TRANSPORTATION (DOT)



Ms. CYNTHIA C. RAND
COMMITTEE OF PRINCIPALS



Ms. NANCY H. CORREIA
COUNCIL OF REPRESENTATIVES

NS/EP TELECOMMUNICATIONS MISSION

DOT has a wide range of missions including the safety of travelers in transit at sea, in the air, and on the ground. Communications support varies from administrative to command and control, using methods that range from the public switched network (PSN) to advanced dedicated systems. DOT incorporates NS/EP considerations into its telecommunication planning, management, and operational programs.

TELECOMMUNICATIONS STAFF ORGANIZATION

The DOT telecommunications program is administered by the Office of Information Resources Management (OIRM), Office of the Secretary of Transportation. The Director of this Office serves as the DOT representative to the NCS COP. NS/EP telecommunications policy and planning are managed by the Chief, Telecommunications Division. A senior telecommunications policy analyst from the IRM Policy and Planning Division serves as the DOT representative to the NCS COR. DOT is a participant in several NCS activities at the working level. In addition, DOT is actively involved with the TPPS, TSP Oversight Committee, SHARES Working Group, and the Vision 21 process. DOT telecommunications staff in the field often participate in NCS-sponsored exercises to maintain proficiency and evaluate program efforts. Most importantly, DOT telecommunication field components continually demonstrate the ability to provide communications in support of actual NS/EP-related missions.

DOT's operating administrations provide systems and networks to support their mission needs.

The efforts of the United States Coast Guard (USCG), FAA, Federal Highway Administration (FHWA), Research and Special Programs Administration (RSPA), and U.S. Maritime Administration (MARAD) are included in DOT's input to the FY93 NCS Annual Report.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

DOT has a number of significant accomplishments to report and several NS/EP-related telecommunication initiatives underway. Many of these are listed by DOT operating administration and are highlighted in the following text.

UNITED STATES COAST GUARD (USCG)

NS/EP TELECOMMUNICATIONS MISSION

USCG NS/EP objectives are threefold: to provide essential communications for the command and control of Coast Guard forces, to reconstitute the National Maritime Distress and Safety System, and to provide telecommunication assets, as required, to DoD in support of the National Command Authority.

TELECOMMUNICATIONS STAFF ORGANIZATION

The Office of Command, Control, and Communications, USCG (G-T) is the program director for the C³ support program. (See Exhibit 4-2 for an organization chart.)

G-T completed a major reorganization that created the USCG's first center of excellence. The USCG Telecommunication and Information Systems Command (TISCOM) was established to provide "one-stop shopping" for communications systems, services, and information systems support. The Telecommunications Operations Division (G-TTO) merged two of its three branches with the Coast Guard Information Systems Center to form TISCOM. The new command, located in Alexandria, Virginia, will also administer the USCG's COMSEC program.

The office reorganization also formed a new Telecommunications Management Division (G-TTM). The new division will handle telecommunications program management (plans, budget, and policy), marine radio policy, and spectrum management functions.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

USCG is conducting the following activities:

Advanced Narrowband Digital Voice Terminal (ANDVT)

ANDVT installations were completed, including those onboard USCG aircraft. These installations now provide a higher quality secure signal to a wider range of units, enhancing USCG's overall command, control, and interoperability.

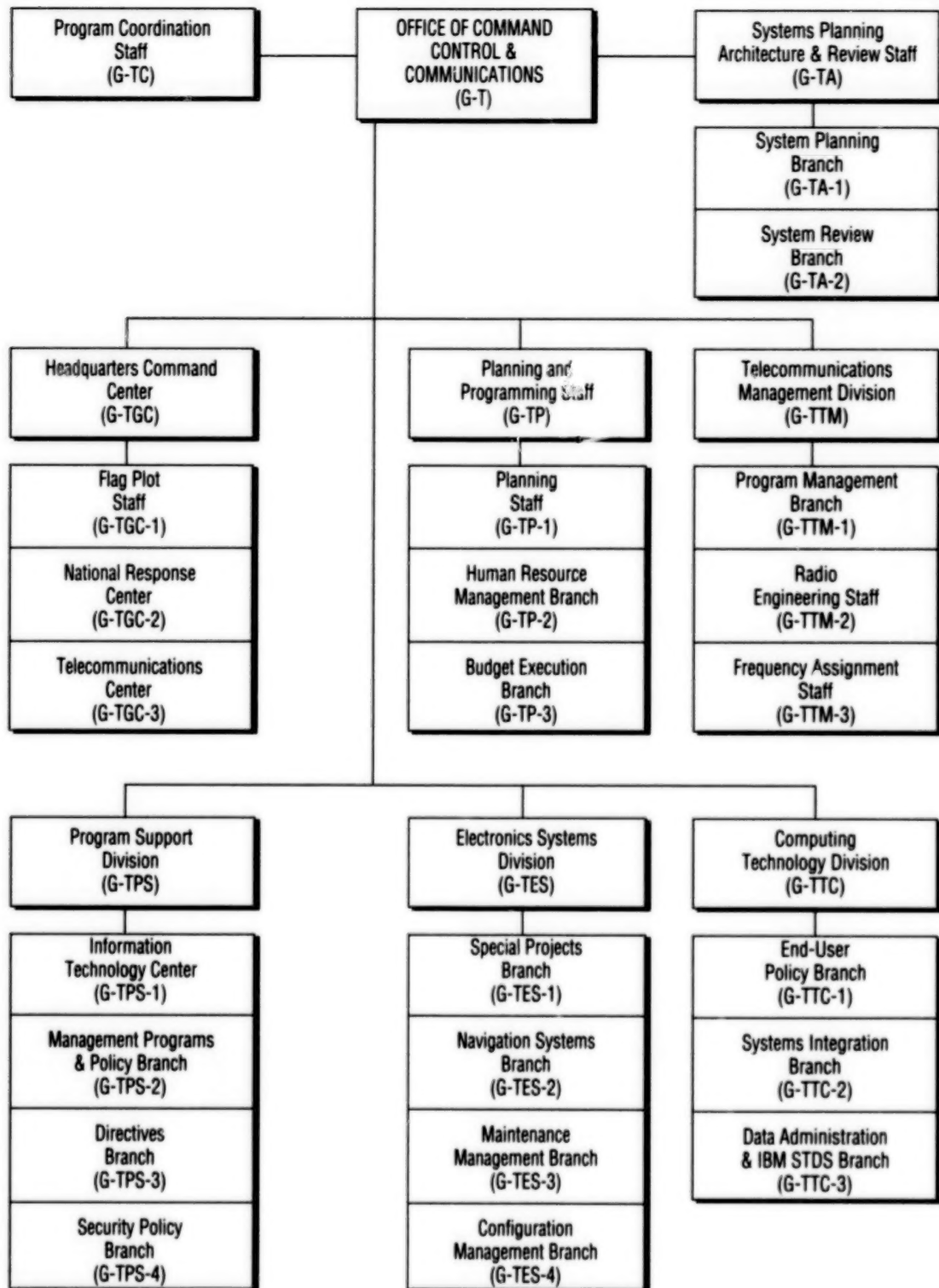
Global Maritime Distress and Safety System (GMDSS)

GMDSS was adopted as a treaty requirement at the 1988 Safety of Life at Sea Convention. The concept of GMDSS will be completely phased in by February 1, 1999. USCG took another step toward final implementation on August 1, 1993, when medium frequency (MF) radio telegraphy operations ceased at all communications stations and onboard similarly equipped USCG cutters. These operations included a continuous watch of the international distress frequency 500 kilohertz (kHz) and marine information broadcasts (e.g., weather and notice-to-mariners). Additionally, the USCG Communications Station located in Boston, Massachusetts, is prototyping a new HF Digital Selective Calling (DSC) system that will eventually replace analog very high frequency (VHF), MF, and HF radiotelephone systems throughout the USCG.

UHF Satellite Communications (SATCOM)

USCG is procuring tactical, portable ultra high frequen-

EXHIBIT 4-2
Organization of the Office of Command, Control, and Communications (C³)



cy (UHF) satellite terminals for selected ships and shore units to enhance law enforcement and DoD interoperability. In addition, USCG plans to equip high and medium endurance cutters and C-130 aircraft with the DoD-mandated Demand Assigned Multiple Access (DAMA) system. DAMA is the standard interface for ships and aircraft operating UHF SATCOM. This system will provide Coast Guard ships and aircraft with a fully functional satellite suite with voice, data, and command and control (C²) capabilities. STU-III-compatible INMARSAT-A terminals are being installed on medium and high endurance cutters. INMARSAT-C low-volume, data-only equipment is being installed on cutters and patrol boats for maritime safety/distress messaging and as an alternative command and control circuit.

Video Teleconferencing (VTC)

USCG is evaluating VTC options ranging from desktop video phones to fixed compressed video conference rooms. VTC may offer a more efficient option to travel per diem costs associated with meetings and conferences throughout the USCG. Initially, the leasing of video teleconferencing services from other Government organizations will fulfill immediate requirements while USCG continues to evaluate operational requirements, industry standards, systems compatibility, and policy issues.

Transportable Communication Centrals (TCC)

Two new TCC's have been delivered to USCG communications area master stations that are far more advanced than their predecessors. Their secure, complex, and powerful communications systems are more reliable, flexible, and capable of interoperability with virtually all other Government organizations involved in anti-drug activities. The mobile TCC includes a transportable self-contained shelter with two operator positions and a tow vehicle. The operator positions are VHF, UHF, HF, and satellite capable. Primary mission deployments are law enforcement and disaster response. Plans to deploy two more scaled-down versions are underway.

Communications System 2000 (COMMSYS 2000)

COMMSYS 2000 is a strategic concept that began in 1992 to transform many of the USCG's radio and record message services. It will restructure USCG COMMSYS, making it less facility and resource intensive. Under COMMSYS 2000, USCG plans for only two fully manned long-range communications stations (COMMSTA) at Chesapeake, Virginia, and Point Reyes, California. These stations will have numerous remote transmitter and receiver capabilities at locations that are now fully manned COMMSTA's. Also, the two stations will be capable of assuming each other's functions, including access to remote sites. The Pacific area is nearing completion of a project to consolidate COMMSTA Guam's functions into the Mariana Section operations center. COMMSTA Miami's restoration, following the destruction by Hurricane Andrew, has allowed early implementation of the planned future COMMSYS 2000 architecture. USCG also plans to fully automate message processing in its district communication centers.

Electronic Key Management System (EKMS)

USCG has taken the second step toward EKMS with installations of the Navy's Key Distribution System (NKDS). The system uses personal computers (PC) with two separate software applications; one to administratively manage the COMSEC account and the other to send transactions to the Navy using a STU-III. USCG has more than 3,000 STU-III's, with every operational unit having at least one. The next step will be to electronically distribute key to COMSEC accounts. USCG continues to operate an over-the-air key distribution broadcast in both the Atlantic and Pacific areas.

FEDERAL AVIATION ADMINISTRATION (FAA)

NS/EP TELECOMMUNICATIONS MISSION

The primary NS/EP objective of the FAA is to ensure continued safe and efficient operation of the National Airspace System (NAS) during periods of stress. This involves both the required operational telecommunication assets and telecommunications essential for C² functions.

TELECOMMUNICATIONS STAFF ORGANIZATION

The Associate Administrator for Airway Facilities is responsible for all telecommunication policies and standards. All operational and administrative telecommunication management activities are performed within the Telecommunications Management and Operations (TM&O) Divisions. The Office of Information Technology is responsible for overall compliance with Federal Information Resource Management Regulations (FIRMR).

SIGNIFICANT ACCOMPLISHMENTS

The National Radio Communications System (NARACS) is a voice and data communications system that provides minimum essential communications capability to support DOT, DoD, and FAA missions during emergencies. NARACS assets contain HF/single sideband (SSB), VHF/FM, and microwave relay facilities. NARACS will interoperate with DoD, the National Command Authority, USCG, FEMA, and other Government organizations. The FAA is a member of the SHARES Interoperability Working Group, and uses NARACS to participate in the SHARES program at 42 locations. The NARACS program, as an NAS project, is

still ongoing. Upon its completion, FAA will have 46 HF/SSB fixed ground stations. Additionally, 20 to 25 flight check and administrative aircraft will be equipped with compatible HF/SSB radio equipment.

Under the NARACS program, all FAA regional offices, Technical and Aeronautical Centers, and Air Route Traffic Control Centers (ARTCC) have DCS AUTODIN equipment. This provides a secure data interface between all major FAA facilities, the DoD, and civil Government organizations.

The Recovery Communications (RCOM) Program, a follow-on effort to NARACS, achieved Key Decision Point One (KDP1) approval in 1993. The program will complete the FAA emergency communications program in its entirety. The 1993 update to the program provides improved hand-held VHF transceivers, upgrades HF systems to include the Automatic Link Establishment (ALE) feature, and adds a satellite communications capability. A request for information was released to industry in September 1993.

The FAA installed the following technologies to support NS/EP telecommunications:

- ▼ Secure Telephone Conference System. Ordered; to be installed in the Washington, DC Operations Center. This system will provide an inter- and intra-agency secure voice conference capability.
- ▼ Digital Telephone Switch. Currently updating from analog to digital voice communications with a new telephone switch. This switch will provide improved nonsecure conference capabilities. Upon program completion, the new switch will be

installed at all regional headquarters, Aeronautical and Technical Centers, and major air traffic control facilities.

FAA has established an ongoing program to transition its communications systems to meet industry and international standard interfaces and protocols. In 1993, FAA orders and standards were revised to begin the transition to open-system interfaces. A meeting was held with the NCS to coordinate agency participation in national standards-making activities.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

Leased Interfacility NAS Communication System (LINCS)

FAA awarded its LINCS contract on March 13, 1992, to MCI Telecommunications Corporation. Following a successful resolution of a protest, implementation of LINCS began in June 1992. New, full-period private line (dedicated) circuit requirements will be provided under this contract except for administrative and some noncritical operational circuits that will be provided by FTS2000. The part of the LINCS network backbone that connects the FAA's Air Route Traffic Control Centers will be completed in 1993, and existing circuits will be transferred to LINCS as soon as possible after the affected backbone segments become operational. The remaining backbone segments will be completed in 1994 and 1995. The LINCS contract has provisions for TSP assignments and some circuits that transition to LINCS will retain their TSP codes. However, TSP requirements will mostly be satisfied by protecting the diverse digital backbone rather than individual circuits.

FAA Telecommunications Satellite (FAATSAT)

FAATSAT will improve the overall performance of operational air traffic telecommunications and aid in the elimination of single points-of-failure. Satellite-based services will be provided among domestic air traffic facilities including Puerto Rico and Hawaii. In addition to providing connectivity for the FAA's Traffic

Management System and Meteorologist Weather Processor Network, FAATSAT will provide connectivity to facilities where terrestrial telecommunications is impractical, unreliable, or not cost-effective. FAATSAT will also provide transportable and portable communications that can be rapidly deployed as needed for special events or emergencies. The FAATSAT request for proposals is expected to be issued in early October 1993.

The Contingency Communications Support Team (CCST)

The CCST, which uses satellite transceivers with other communications equipment, was deployed for several events, including Hurricanes Andrew in Florida, and Iniki in Hawaii; the Papal visit and World Youth Day in Denver, Colorado; Exercise Response '93 in Salt Lake City, Utah; the World University Games in New York State; and during potential civil unrest in Los Angeles, California. Efforts continue to reduce the size and weight of the package, while adding additional capabilities.

STU-III Program

The FAA's STU-III installation program continued, adding 100 units this year for a total of 700. FAA is updating older instruments with the 9600 baud units. A limited number of the facsimile option instruments that interface with the 9600 baud units have been purchased.

VTC

Beta testing of VTC will commence in mid-October with four sites: Atlantic City Technical Center, New Jersey; Oklahoma City Aeronautical Center, Oklahoma; Center for Management Development, Florida; and the Washington Operations Center. Full implementation will add all regional headquarters and major air traffic control facilities.

FEDERAL HIGHWAY ADMINISTRATION (FHWA)

NS/EP TELECOMMUNICATIONS MISSION

As prescribed by E.O. 12656, FHWA and State Highway Agencies (SHA) will ensure the operation and maintenance of the highway network during national emergencies to include national defense and natural and man-made emergencies.

TELECOMMUNICATIONS STAFF ORGANIZATION

The FHWA consists of the Washington, DC, headquarters, nine regional offices, and a division office in each State. Each division office works daily with its respective SHA. The normal administrative organization is also used during a national emergency. Telecommunication responsibilities are primarily a collateral duty of the overall organization.

SIGNIFICANT ACCOMPLISHMENTS

The FHWA Emergency Communications System (ECS) was instrumental during the recovery effort following Hurricane Andrew in obtaining essential highway information from the disaster area immediately following the storm, and for search and rescue missions and evacuation purposes. The information was obtained through FHWA's ECS connections through the SHARES program and participating stations. FHWA is converting many of its stations to solid-state technology and moving them closer to division and regional offices for more responsive operations. Two main 1000-watt network ALE stations have been established to serve as network control stations, and the process of obtaining a 500-watt station for the headquarters building is underway. This station will be part of the new Office

of Emergency Transportation (OET) Center. A 2-day FHWA Emergency Program and ECS course has been developed and held in three regions this year. This course will be presented in other regions in the near future. A 2-year pilot program to provide radio expertise to FHWA ECS stations was formalized with the Civil Air Patrol (CAP) in Region IV. If the pilot program is successful, the program may be offered to other regions on a voluntary basis. The program is proceeding well, with designated CAP stations participating in FHWA quarterly communications exercises.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

FHWA initiatives in this area include developing HF ALE radio capability for headquarters operations; providing technical emergency preparedness and ECS training for its staff; providing portable radio stations, cellular telephones, and portable facsimiles to areas prone to natural disaster situations; and upgrading hard copy equipment for radio operations.

RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION (RSPA)

NS/EP TELECOMMUNICATIONS MISSION

RSPA's OET is responsible for the overall development and management of the departmental civil emergency preparedness policies, plans, procedures, systems, and programs. It also ensures the integration of emergency preparedness activities by various departments and agencies to discharge the Secretary of Transportation's emergency preparedness responsibilities. The OET's responsibilities cover a broad spectrum, but can be divided into the following general areas:

- ▼ Departmental emergency policies and plans for natural and technological disasters, economic crises (e.g., strikes and fuel shortages), and national security crises
- ▼ Coordination of the emergency preparedness programs of the Department's elements to ensure effectiveness
- ▼ Development of an infrastructure to support emergency operations, including operating facilities and communications
- ▼ Management of the Department's response to emergencies
- ▼ Training, exercises, and emergency preparedness evaluations.

TELECOMMUNICATIONS STAFF ORGANIZATION

The functional responsibility for telecommunications management within OET is assigned to the Operations Readiness Program Manager. The 10 Regional Emergency Transportation Coordinators (RETCO) are

responsible for regional-level DOT/OET emergency communications management.

SIGNIFICANT ACCOMPLISHMENTS

FY93 was marked by the residual effects of numerous catastrophic disasters such as the recovery aftermath of Hurricanes Andrew in Florida and Iniki in Hawaii, and the disastrous flooding in the Midwest. The strong and robust communications that were installed in previous years helped provide the Secretary and the emergency response personnel in headquarters and in field locations with effective communications to the disaster areas.

DOT was a major player in Exercise Response '93. Using the departmental HF/SSB radio network, maintained by the Federal Highway Administration, DOT personnel were able to maintain reliable communications with the simulated disaster area and other regional field locations.

DOT has also effectively used portable SATCOM equipment or systems belonging to FAA. The CCST is able to deploy and immediately establish HF and satellite communications with its sophisticated portable equipment that is also capable of transmitting color photography to another station at disaster locations. OET also completed the acquisition of state-of-the-art portable facsimile equipment that can be deployed in any crisis environment.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

In FY94, OET will continue upgrading communications within DOT's modal administrations and upgrading the communication capability of the Secretary's Crisis

Management Center. Because of many recent catastrophic natural disasters, OET has sought ways to improve overall communication — ways that are useful both in natural disasters and NS/EP environments. Although emergency/response planning has recently focused on combating the ravages of natural disasters, the wise investment in NS/EP communications equipment has paid off by allowing DOT to take a multimission approach to satisfying its emergency communications needs.

MARITIME ADMINISTRATION (MARAD)

NS/EP TELECOMMUNICATIONS MISSION

One of MARAD's vital NS/EP telecommunication missions is to ensure that U.S. merchant ships and ships of the Ready Reserve Force (RRF), a part of the National Defense Reserve Fleet, can communicate with the U.S. Navy. In addition, the MARAD Telecommunications Center provides recorded message NS/EP support to the Secretary and much of the DOT Headquarters.

TELECOMMUNICATIONS STAFF ORGANIZATION

Responsibilities are handled as a collateral duty by the overall organization.

SIGNIFICANT ACCOMPLISHMENTS

Exercise BELL BUOY '93

MARAD supported its agreement with the Navy CINC for Pacific Fleet by jointly conducting communications interoperability exercises in the Naval Control of Shipping Exercise BELL BUOY '93. This exercise involved more than 50 U.S.-flag merchant ships. The successful communication tests were designed to test procedures for merchant ships to communicate with NCS organizations and to exercise emergency communication procedures. The exercise focused on the new approach to regional conflicts with two main shipping control units established in Japan and Singapore. Geographic group calls to vessels were successfully tested.

RRF Compliance with GMDSS

MARAD continues to ensure the upgrade in communications and safety equipment on board RRF vessels.

GMDSS is being phased in through 1999, affecting certain changes to the ships' communication and distress alerting systems. MARAD has ensured compliance to date with the purchase of 406 megahertz (MHz) Emergency Positioning Indicating Radio Beacons and NAVTEX marine safety receivers.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

Defense Communications Course

MARAD and the U.S. Merchant Marine Academy's Continuing Education Department continue to provide (on a bimonthly basis) a defense communications course. This course is part of the 2-week National Sealift Training Program. The course was developed by, and continues to receive the support of, the U.S. Navy, USCG, FCC, and the private sector to better prepare senior deck officers to perform communication functions during a national emergency. Lessons learned from Operations Desert Shield/Storm were incorporated into this program. Seven classes consisting of 12 to 15 enrolled students were conducted.

INMARSAT

MARAD retains a portable INMARSAT land transportable terminal, which is available for contingencies. This unit will allow voice and message communications to vessels and access to public switched networks on an emergency backup basis to existing means. Staff members have been trained in setting up and operating this unit.

MARAD has had the U.S. Merchant Marine Academy vessel Kings Pointer designated as a SHARES

station. The vessel serves as part of the FHWA HF telecommunications network. Equipment tests will continue throughout FY94.

PENDING ISSUES

A major concern of the U.S. Navy and MARAD is the lack of communications interoperability among naval forces and merchant ships, both RRF and U.S.-flag vessels in active service. However, the increased carriage of INMARSAT terminals aboard U.S. Navy warships and fleet support vessels does offer a future medium for interoperability.

The adoption by the International Maritime Organization (IMO) of the GMDSS and the pending FCC changes to the 1934 Communications Act will cause large-scale changes in communication to vessels at sea, equipment carriage requirements, and radio officer requirements. Crew members responsible for communications aboard vessels must be technically and operationally capable. The Defense Communications Course provides some training in this area. The FCC will specify exact training requirements for GMDSS, which is designed to provide ship-to-shore alerting for emergencies, and ship-to-ship or ship-to-rescue forces communication. The system emphasizes more automated and satellite-based equipment. These changes are to be phased in through 1999.

There is mutual interest in reestablishing the U.S. Navy/Merchant Marine Communications (MERCOMMS) Interoperability Working Group. The MERCOMMS group consisted of U.S. Navy, FCC, MARAD, USCG radio officers, and private sector representatives who met regularly to discuss communications interoperability problems with the Navy. The group did not meet during FY93 because of a Navy reorganization. MERCOMMS may be reestablished when a suitable Navy chairperson can be identified.

DEPARTMENT OF ENERGY (DOE)



MR. RAYMOND S. BARROW
COMMITTEE OF PRINCIPALS



MR. ROBERT M. LEWIS
COUNCIL OF REPRESENTATIVES



NS/EP TELECOMMUNICATIONS MISSION

The Department's NS/EP telecommunications mission is to provide secure and reliable emergency communications to support these essential departmental NS/EP functions:

- ▼ Provide information on energy supply and demand conditions and on requirements for and the availability of materials and services critical to energy supply systems
- ▼ Identify energy facilities essential to mobilization, deployment, and sustenance of resources to support national security and welfare, and to develop energy supply and demand strategies to ensure continued provision of minimum essential services in national security emergencies
- ▼ Ensure the security of nuclear weapons or devices in the custody of the Department and other department programs and facilities
- ▼ Manage all emergency planning and response activities pertaining to departmental nuclear facilities.

TELECOMMUNICATIONS STAFF ORGANIZATION

DOE is organized along programmatic and functional lines. Major systems with NS/EP responsibilities, such as those supporting the Power Marketing Administrations and the Nuclear Emergency Search Team (NEST), are the operational responsibility, respectively, of the individual Power Marketing Administrations and the Assistant Secretary for Defense Programs.

- ▼ The Assistant Secretary for Human Resources and Administration has the overall responsibility for NS/EP policy and telecommunications management and ensures compliance with pertinent national and international regulations.
- ▼ The Deputy Assistant Secretary for Information Management through the Director of IRM Policy, Plans, and Oversight, develops departmental NS/EP policy and plans, and coordinates the Department's NS/EP telecommunication activities, ensuring that they are consistent with national directives.
- ▼ The Department's internal TSP program is managed by the Information Technology Operations Division. The Energy Industry TSP Sponsorship Program is managed by the Office of Energy Emergency Operations.
- ▼ The Director of IRM Policy, Plans, and Oversight provides departmental policy direction for NS/EP telecommunication matters and representation on the NCS emergency management teams.
- ▼ The Director of IRM Policy, Plans, and Oversight is the departmental representative to the NCS COP.
- ▼ The Director, Communications, Emergency Management, and Standards Division is the departmental representative to the NCS COR.

SIGNIFICANT ACCOMPLISHMENTS

Telecommunications Electric Service Priority (TESP) Restoration Initiative

- ▼ The Telecommunications System Survivability Task Force of the NSTAC identified an extended power outage as a major vulnerability of the telecommunications industry. DOE and the NCS worked with the telecommunications industry Energy Task Force to address this problem.
- ▼ The Energy Task Force developed criteria and a process to identify telecommunication facilities that serve NS/EP functions and to recommend them for inclusion in existing electric service priority (ESP) restoration systems. When ESP systems have been modified by appropriate State officials and utilities, procedures will be put in place that can be implemented by each utility during emergencies to restore power to critical NS/EP facilities. To disseminate information about the TESP program to States and utilities, DOE has published and distributed the guide, "Telecommunications Electric Service Priority Restoration Initiative" (DOE/OE-0002), February 1993.

Priority Access by Telecommunication Providers to Fuel for Emergency Backup Generators

- ▼ The NSTAC directed the Energy Task Force to examine the issue of priority assignment of fuel to telecommunication service providers. DOE, as a member of the Energy Task Force, addressed the problem and advised that telecommunication providers are responsible for making their own arrangements for emergency fuel storage and priority delivery contracts.
- ▼ In approximately 40 States where fuel set-aside programs exist, DOE recommends that telecommunication providers work with State authorities to become authorized fuel recipients. As a last resort, defense production authorities could be invoked by the Federal Government.

Mutual Aid (Federal/State/Local Communications)

- ▼ The Albuquerque, New Mexico, Operations Office for Continuity of Government/Public Safety high frequency radio system (including 60-foot tower and rotatable log period antenna) has been installed. This system can communicate with the five State capitals throughout Radiological Assistance Program Region IV, the Waste Isolation Pilot Plant, in Carlsbad, New Mexico, and FEMA Region VI Headquarters in Denton, Texas.
- ▼ In June 1993, the Fernald Field Office, Miami Township, Ohio, conducted a joint response exercise with the Hamilton and Butler, Ohio, counties' civil defense organizations, and several local fire and emergency response organizations. In March, the Fernald Mobile Emergency Operations Center was used to support the township's emergency authorities in containing and controlling an ammonia leak.
- ▼ T1 access has been acquired by the Oak Ridge Operations Office to the Tennessee Emergency Management Association. Termination will be at the Knoxville, Tennessee, Central Office with routing diversity to Oak Ridge, Tennessee.
- ▼ The Superconducting Super Collider Laboratory has established UHF and VHF radio system communications with emergency service organizations in Dallas and Ellis counties, Texas.
- ▼ The Naval Petroleum Reserves in California installed a satellite capability that can be used to monitor headquarter's satellite communications during national/State emergencies.

Diverse Routing

- ▼ An optical fiber diverse route capability "SHARPS PLUS" was installed at the Albuquerque Operations Office during August 1993. This permits automatic, uninterrupted switched network connectivity via two separate fiber routes around numerous points-of-failure in the local exchange carrier's network.

- ▼ The Schenectady, New York, Naval Reactors Office completed its program to establish diverse routing to the Schenectady central office.

Emergency Operations Center (EOC)

- ▼ A temporary EOC has been established by the Superconducting Super Collider Laboratory.
- ▼ An FTS2000 T1 circuit and associated transmission equipment was installed to link the Richland EOC with the DOE headquarter's EOC and was completed by the Richland Operations Office.

Emergency Notification

- ▼ A major upgrade of the Lawrence Livermore National Laboratory's radio paging system has enhanced its ability to notify Accident Response Group/NEST response personnel, and on-site Emergency Preparedness/Emergency Management Center personnel.

Cellular Telephone Services

- ▼ Cellular telephone service was extended to the desert site areas at the Idaho National Engineering Laboratory. This service provides alternate and field communications for coordinating disaster, backup, and recovery activities between remote desert sites and Idaho Falls field centers. Cellular communications also provides an alternate central office access if blockage occurs at the local exchange.
- ▼ A backup cellular emergency telephone system has been installed at the Bettis Atomic Laboratory, West Mifflin, Pennsylvania, to bypass the central office in the event of its failure.

Power for Departmental Telecommunication Facilities

- ▼ A commercial service contract to upgrade commercial power to each Aiken, South Carolina, telephone exchange location was completed in November 1992. Completion of this contract ensures the adequacy of commercial power while enhancing reliability.

- ▼ The Schenectady, New York, Naval Reactors Office installed an uninterrupted power supply to support the Emergency Control Center's telephone conferencing bridge.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

TESP Restoration Initiative

- ▼ DOE began outreach activities to States (and U.S. territories and possessions) in January 1993 to provide information on the voluntary TESP initiative and to begin the implementation process. As of August 1993, 24 States had requested their critical telecommunications facility lists to begin the implementation process. NCS will update the critical telecommunications facility list periodically and provide the list to DOE. DOE will coordinate with the States to update their TESP lists.

Mutual Aid (Federal/State/Local Communications)

- ▼ The State of New Mexico has received its FCC license to operate mutual aid radio communications in the 800-MHz portion of the radio frequency spectrum. The Albuquerque Operations Office is installing its equipment to be able to operate with State and local authorities during joint Federal-State accidents and incidents.
- ▼ The Oak Ridge Operations Office continues to replace VHF conventional radio networks with a UHF trunked radio system. Senior management approval has been received for an area-wide trunked radio system employing a "tall tower" concept. Such a system will provide much improved service to mutual aid-related incidents and coverage for emergency operations.

Emergency Operations Centers

- ▼ The San Francisco, California, Operations Office intends to order T1 and Very Small Aperture Terminal services during FY94/95 to prepare for EOC implementation.

- ▼ The Chicago, Illinois, Operations Office is installing an EOC to provide secure data, voice, and video communications that will connect it to the DOE EOC nationwide network.
- ▼ The redesign of the Richland Operations Office's EOC is in its definitive design stage and is expected to be completed in the first quarter of FY95.

TSP System

- ▼ DOE's internal TSP program has completed its transition from the Restoration Priority System to the TSP system. DOE now has 145 services with TSP assignments. Headquarters, DOE, received 87 requests for TSP assignment. DOE Headquarter's approval of 39 requests is pending receipt of additional information; the NCS has approved 13 TSP assignments.
- ▼ DOE will continue to review and sponsor TSP applications from the energy industry, including electric power, natural gas, petroleum, and coal.

NCS SHARES Program

- ▼ The Superconducting Super Collider Laboratory has installed HF radio equipment as preparation for participating in the SHARES program. The activation of this station will bring the number of DOE SHARES stations to 11.

Diverse Routing

- ▼ DOE, with the local telephone company coordination, is continuing to provide true alternate routing (physical separation) of offsite trunking cables that service the Savannah River Operations Office's incoming and outgoing commercial trunks, business individual lines, FTS2000 network traffic, private line circuits/services, and miscellaneous service.
- ▼ An upgrade to the Idaho National Engineering Laboratory Communication System Fiber Transmission Network is planned to provide a second Snake River crossing, which will eliminate a single point-of-failure and complete a physical ring topology. This upgrade will provide the capability

for self-healing networks and alleviate the loss of communications with remote plant facilities should a backbone segment be severed.

- ▼ The Schenectady, New York, Naval Reactors Office is acquiring five cellular STU-III's in FY94 to provide alternate access to the PSN in the event of a failure of the Schenectady central office.

UHF Radio

- ▼ At the San Francisco Operations Office, the Lawrence Livermore National Laboratory has submitted a proposal for a Multi-Site Trunked Radio Communications System. This system is intended to replace obsolete systems now providing emergency services and provide greater flexibility in managing spectrum and equipment.

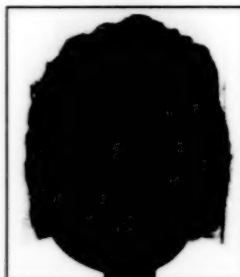
Private Branch Exchange (PBX)

- ▼ An additional 144 station lines are being added to the Albuquerque Operations Office Disaster Avoidance PBX to accommodate increased requests for diverse route connections to the Public Switched Telephone Network and FTS2000.
- ▼ The contract for acquisition of a new digital PBX has been awarded for Western Area Power Administration Headquarters and is scheduled to be operational by December 1993.

Power for Departmental Telecommunication Facilities

- ▼ Planning and engineering action has been initiated to provide backup emergency electrical power to the principal Savannah River telephone exchange complex from an existing high-capacity generator (primary and spare).
- ▼ Procurement and installation of an emergency generator to support the third major system hub (Test Area North) at the Idaho National Engineering Laboratory is planned for FY94. With the installation of this generator, all three major communications hubs at the Idaho Operations Office will have emergency power.

DEPARTMENT OF VETERANS AFFAIRS (VA)



MS. NADA D. HARRIS
COMMITTEE OF PRINCIPALS



MR. HOWARD D. BOYD
COUNCIL OF REPRESENTATIVES



NS/EP TELECOMMUNICATIONS MISSION

The VA NS/EP mission involves the following functional areas:

- ▼ Emergency inpatient and outpatient care and treatment in VA medical facilities, and participation with the DHHS as provided by interagency agreement
- ▼ Emergency compensation, pension, rehabilitation, education, and insurance payments consistent with overall Federal plans for the continuation of Federal benefit payments
- ▼ Emergency insurance and loan guarantee functions in accordance with various emergency conditions
- ▼ Primary health care adjunct to DoD during a war or national emergency
- ▼ Emergency planning and response to radiological emergencies as assigned in E.O. 12657
- ▼ VA representation to the appropriate NS/EP organizations responsible for the national system for emergency coordination, and fulfillment of support responsibilities assigned by E.O. 12656.

TELECOMMUNICATIONS STAFF ORGANIZATION

The VA Office of Telecommunications supports the NS/EP requirements of the Department, which includes the Veterans Health Administration, Veterans Benefits Administration, National Cemetery System, and VA staff support organizations.

- ▼ The function of directing VA-wide NS/EP programs is assigned to the Assistant Secretary for Acquisition and Facilities.
- ▼ The VA Office of Telecommunications, under the Deputy Assistant Secretary for IRM, through the Assistant Secretary for Finance and Information Resource Management, is charged with providing all aspects of telecommunications support to enable the VA to fulfill its mission.
- ▼ The primary contact for all aspects of VA NS/EP telecommunication activities is the Associate Deputy Assistant Secretary for Telecommunications.

SIGNIFICANT ACCOMPLISHMENTS

The Integrated Data Communications Utility (IDCU)

- ▼ To maintain the efficient management of VA communications, managers must continually seek ways to improve VA telecommunications. The IDCU has been fully operational since July 1991, and is the VA's primary wide area data communications vehicle. The IDCU provides many significant enhancements to VA telecommunications.
- ▼ The rapid growth that had been experienced on the previous VA packet switched network is now being experienced by the IDCU. The IDCU is one of the largest private networks in the country and provides enhanced telecommunications end-user support, as well as improved security and emergency operations capabilities.

- ▼ State-of-the-art network management tools in IDCU provide network managers and end users with real-time and historical data on network status and logistics. These tools help to create a proactive management environment in which both the VA and the IDCU vendor can quickly identify existing and potential problem areas and take steps to correct them. The Telemanagement Information System (TIS) provides network operation oversight, requirements definition and implementation, and supports VA and individual end-user IRM network information needs.

Secure Telephone Used in VA NS/EP

- ▼ Eighty-three STU-III's are placed at strategic VA locations in support of the VA's essential emergency functions. These units provide the capability to pass secure information within the VA and between other Federal organizations involved in NS/EP operations.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

VA maintains three major telecommunication systems to support its NS/EP requirements during a national emergency: IDCU, the VA Nationwide Teleconferencing System (VANTS), and the VA HF Emergency Radio Network. Considerable attention was given to NS/EP-related matters in developing and implementing these telecommunication systems.

VANTS

- ▼ The VANTS replaced the Selective Signaling Voice Conferencing System (SS-4) and provides 384 ports of interactive voice conferencing. The system allows one large 384-port conference or any number of smaller conferences using up to the 384-port maximum capability. The system operates over the commercial network through Multilink, Inc. VANTS will be migrated to the FTS2000 network during FY94. The VANTS operations center is currently at the VA Medical Center, Martinsburg, West Virginia.

California Emergency Radio Communication

- ▼ There are 28 VA facilities in California interconnected through an Emergency Command Control Radio Network (ECCRN); and a radio telephone patching capability is available at all sites. VA is a member of the Los Angeles Federal Board Emergency Radio Network at the VA Medical Center, West Los Angeles, California (Wadsworth Division).

VA Nationwide HF Emergency Radio Communications

- ▼ VA maintains multiple HF emergency radio sites throughout the country including eight corporate HF radio sites. These stations provide essential radio communications during an emergency and/or when other communication resources fail. Additional emergency radios will be placed in VA's four medical regions.

SHARES

- ▼ VA is also an active member of the SHARES HF Radio Program, providing emergency radio communications whenever required and technically feasible.

CENTRAL INTELLIGENCE AGENCY (CIA)



This report is included as part of the CLASSIFIED
supplement to the FY93 NCS Annual Report.

COMMITTEE OF PRINCIPALS
COUNCIL OF REPRESENTATIVES
PHOTOS NOT AVAILABLE



THE JOINT STAFF (JS)



LTGEN ALBERT J. EDMONDS, USAF
COMMITTEE OF PRINCIPALS

COL MARLIN FORBES, USA
COUNCIL OF REPRESENTATIVES
NOT PICTURED

NS/EP TELECOMMUNICATIONS MISSION

The Director for Command, Control, Communications, and Computer (C³) Systems Directorate (J-6) provides assistance to the Chairman of the Joint Chiefs of Staff in the following areas:

- ▼ Develops policies, plans, and programs for C³ systems
- ▼ Ensures adequate C³ support to the CINCs and the National Command Authorities for joint and combined military operations
- ▼ Conceptualizes future C³ systems design, and provides direction to improve command and control systems.

TELECOMMUNICATIONS STAFF ORGANIZATION

The J-6 consists of the Director and two deputy directors. Each Military Department has approximately equal representation by rank and number throughout the Directorate. The Director for C³ Systems, Deputy Director of Unified and Specified Command Support, and Deputy Director of Defensewide Support are general or flag officers from the Military Departments. Exhibit 4-3 depicts the organization of the J-6 Directorate.

SIGNIFICANT ACCOMPLISHMENTS

(Refer to DoD section.)

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

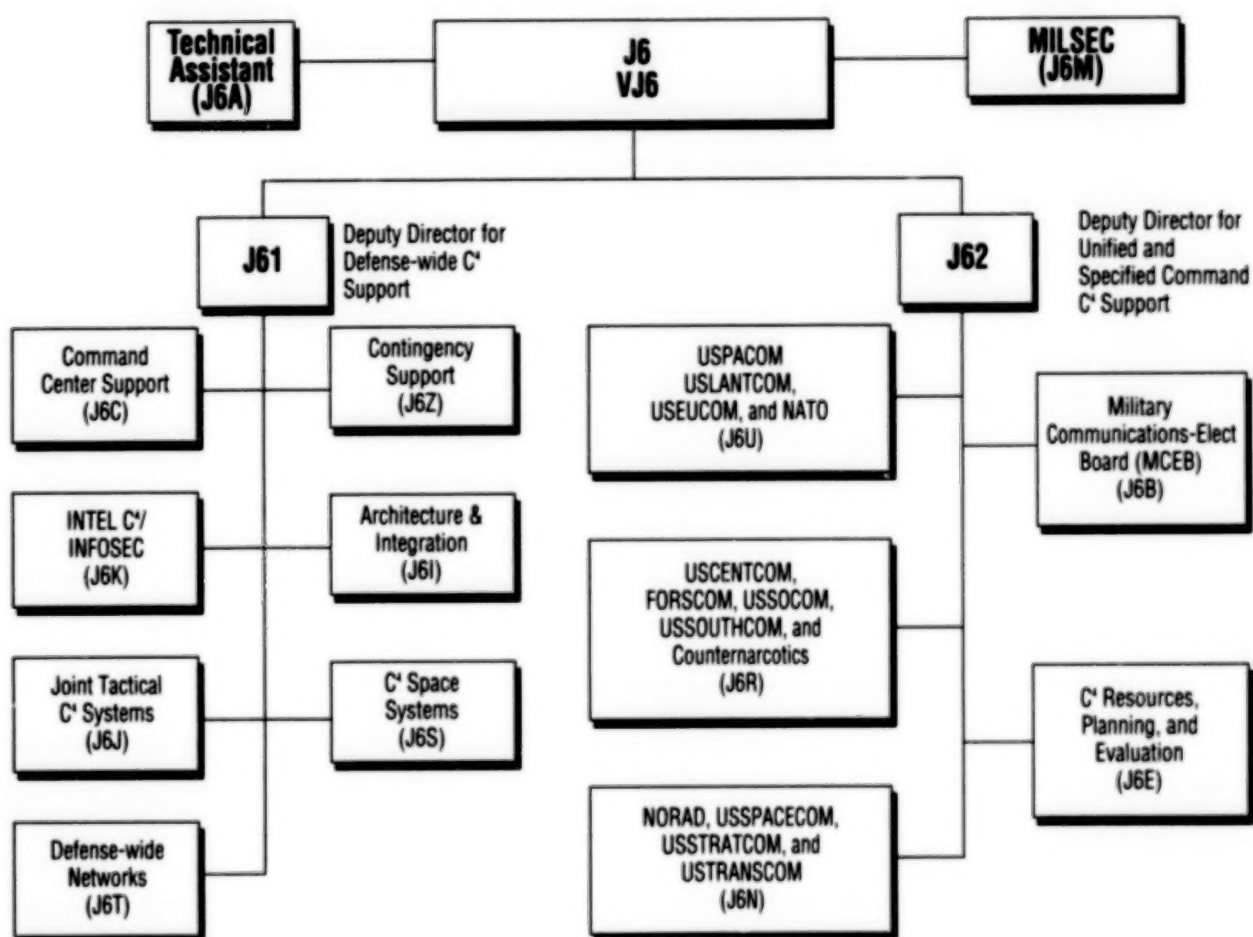
(Refer to DoD section.)

PENDING ISSUES

(Refer to DoD section.)

EXHIBIT 4-3
Command, Control, Communications, and Computer (C³) Directorate (J-6)

J6 Organization





GENERAL SERVICES ADMINISTRATION (GSA)



MR. MICHAEL L. CORRIGAN
COMMITTEE OF PRINCIPALS



MR. GEORGE F. FLYNN, JR.
COUNCIL OF REPRESENTATIVES

NS/EP TELECOMMUNICATIONS MISSION

GSA provides information processing and telecommunication services to the Federal Government under routine and critical conditions. According to E.O. 12472, GSA establishes Governmentwide policies and regulations "to ensure that federally owned or managed domestic communications facilities and services meet the national security and emergency preparedness requirements of the Federal civilian departments, agencies and entities." Consistent with the responsibilities assigned by E.O. 12472, GSA manages the FTS2000 network, the Aggregated Services Procurement (ASP), Washington Interagency Telecommunications System (WITS), and the Purchase of Telephone Services (POTS) contracts. GSA acts as the worldwide manager of the Federal Secure Telephone Service (FSTS) program, maintains FIRMR's, promulgates Federal telecommunication standards, and serves as the Financial Manager of the Information Technology Fund.

GSA also provides:

- ▼ Four Zonal Emergency Communications Planners (each zone consists of two or more regions) and six Regional Emergency Communications Planners to support the NCS
- ▼ NCS Regional Managers for the 10 standard Federal regions in support of Federal Emergency Plan D and in support of FEMA under Public Law 93-288
- ▼ Federal Emergency Communications Coordinators (FECC) under the National Plan for Telecommunications Support in Non-Wartime Emergencies.

TELECOMMUNICATIONS STAFF ORGANIZATION

The regional Information Resources Management Service (IRMS) within GSA is organized into a four-zone configuration with field offices in the 10 Uniform Federal Regional Council Cities and the National Capital Region. Exhibit 4-4 depicts the organization of the GSA central office. The IRMS National Security Emergency Preparedness Division is composed of the Emergency Preparedness Branch and the Policy, Plans, and Programs Branch. These Branches coordinate GSA NS/EP: (1) telecommunications service provisioning (e.g., FTS2000, WITS, ASP, and POTS); (2) policy formulation activities with GSA regional and zonal offices; (3) regulatory responsibilities; (4) standards development and promulgation; and (5) COP/COR responsibilities.

The GSA IRMS NS/EP Division reports directly to the Assistant Commissioner for Telecommunications Services during exercises and on emergency/disaster telecommunication operational matters.

SIGNIFICANT ACCOMPLISHMENTS

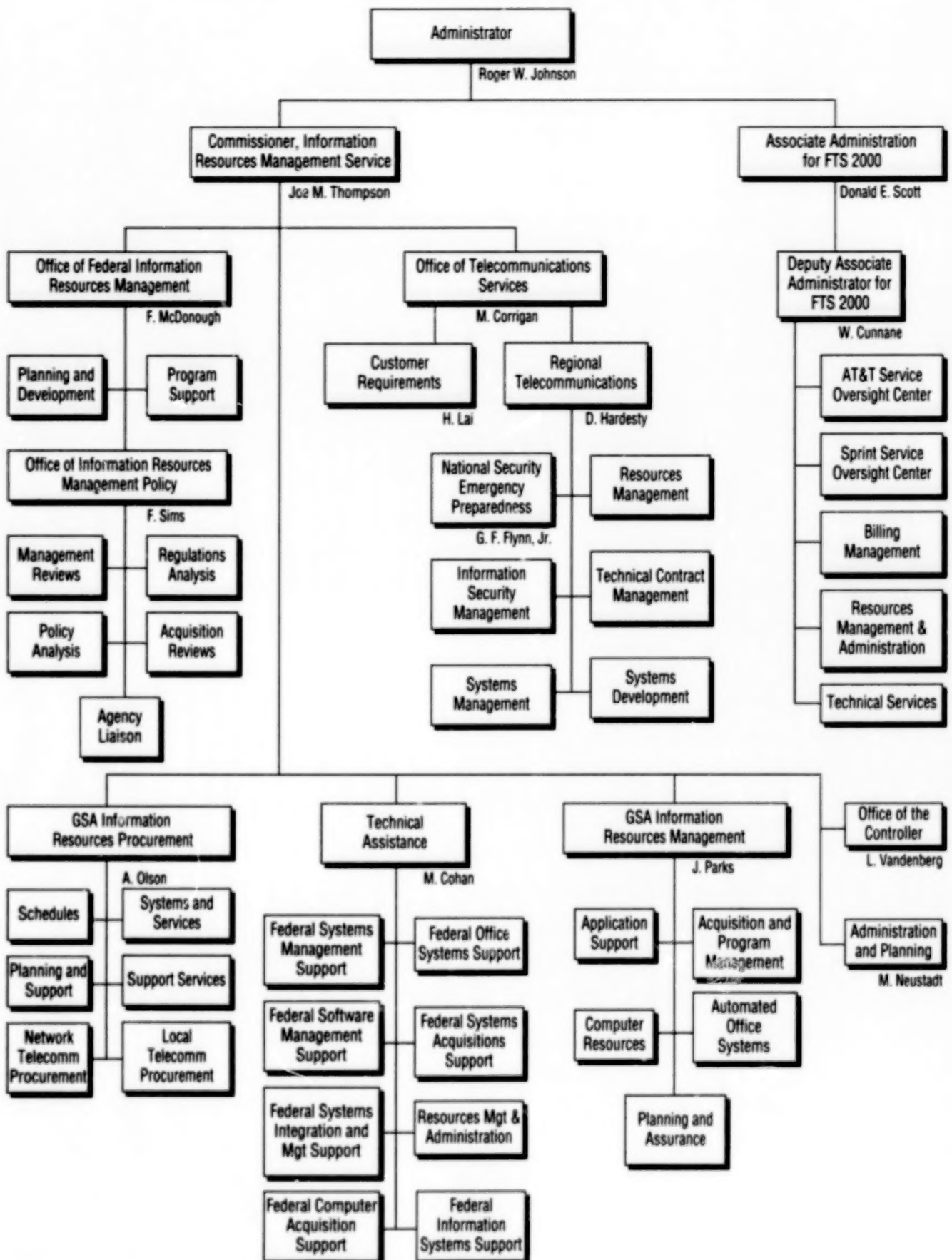
GSA has improved the Government's NS/EP capabilities and readiness through accomplishment of the following NS/EP telecommunication activities:

Capabilities Improvement

- ▼ The GSA Telecommunications Development Institute (GTDI) in Kansas City, Missouri, has provided training in both current and future telecommunications technology and GSA's NS/EP roles and responsibilities to GSA personnel throughout the

EXHIBIT 4-4

Organization of the General Services Administration



United States. The institute contributes to ensuring that GSA can continue to effectively support NS/EP activities during this period of dynamic change in technology and industry infrastructure.

- ▼ A senior GSA NS/EP manager recently completed the National Senior Cryptologic Course, CY-600, at the NSA.
- ▼ The NS/EP Division and the GSA Regional Emergency Communications Managers have established a data base of available telecommunication products and services for use by GSA regional and zonal planners during emergency and disaster events.
- ▼ A GSA senior staff member served on the NCS GETS Source Selection Advisory Council. A contract was competitively awarded for GETS through the efforts of the council.
- ▼ GSA representatives participated in the International Security Systems Symposium and Exhibition. The various technical topics addressed by the military, industry, and the Government served to improve GSA's Operations Security (OPSEC) capabilities.
- ▼ GSA upgraded and replaced the telephone system, installed a new HF radio system, and replaced the emergency fuel tank system at its relocation site.
- ▼ GSA awarded one replacement POTS contract and one Technical Support Services contract (TSC). POTS and TSC provide contractual arrangements for Customer Premises Equipment and technical support services.

Readiness Improvement

- ▼ GSA participated in the planning, conduct, and evaluation of an NS/EP exercise relating to a potential catastrophic earthquake that could occur on the Wasatch Fault in Salt Lake City, Utah. This required cooperation with Federal, State, and local government organizations.

- ▼ GSA representatives, to enhance NS/EP strategic planning, participated in Interagency Group meetings of the National Emergency Management Team (NEMT) and exercises pertaining to classified national-level readiness activities directed by the White House.

- ▼ GSA conducted a National Defense Executive Reserve (NDER) training workshop. The workshop focused on how to utilize NDER personnel more effectively for disaster response support.

- ▼ GSA has briefed the COP/COR, the NCS, and other interested client departments and agencies on the NS/EP capabilities inherent in GSA's consolidated services.

- ▼ GSA has filled all National Telecommunications Management Structure (NTMS) regional team personnel positions commissioned in FY93. GSA participated in the training of the new NTMS teams established in FY93.

- ▼ GSA representatives participated in numerous interagency meetings and coordinated the GSA regional emergency response efforts for the provisioning of telecommunication support requirements to Federal agencies in their recovery efforts from approximately 37 presidentially declared disasters, including hurricanes, floods, and tornadoes.

- ▼ GSA has participated in the review and update of the Federal Response Plan and the Emergency Support Function #2, Communications Annex. All authorities and responsibilities of GSA have been reviewed, including the role of all GSA elements in ensuring the management of NS/EP telecommunication services under all stress conditions.

- ▼ GSA continued to chair the COR TPPS until its termination. GSA participated in the development of the replacement planning process.

- ▼ A senior GSA official participated in the Global '93 exercise held at the Naval War College in Newport, Rhode Island. This training and planning tool

assisted in the development of outyear operating projections.

- ▼ A GSA senior manager participated on the Military Communications Emergency Board principals meetings at the Department of Defense.
- ▼ A GSA senior manager participated in Joint Telecommunications Resources Board (JTRB) exercises and planning meetings at the Office of Science and Technology Policy.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

During FY94, GSA will continue to participate in the following NS/EP telecommunication programs:

Capabilities Improvement

- ▼ GSA is initiating an E-mail reporting and service order processing service, and, in the future, expects to interface its E-mail with the NCS, FEMA, and other agencies in support of disaster and emergency activities.
- ▼ The WITS, ASP, and POTS contracts continue to provide NS/EP services and have been successfully employed during major catastrophic disasters. These contracts, which incorporate state-of-the-art technology, provide digital voice and data local telecommunication services or equipment, and operation, maintenance, and management services.
- ▼ GSA participates in the Federal Wireless Users Forum sponsored by the National Communications System and the National Institute of Standards and Technology. GSA is internally reviewing the benefits of wireless technology and its application to disaster and emergency activities.
- ▼ GSA participates in the development of the CRISP Concept of Operations. CRISP is a program whereby Federal departments and agencies can make their telecommunication assets, services, and capabilities available for use by other Federal departments and agencies tasked to support NS/EP requirements during emergency situations.

- ▼ GSA continues to participate in the SHARES Working Group.
- ▼ GSA is starting to review the issues relating to the replacement of the FTS2000. These considerations include NS/EP-unique requirements and capabilities.
- ▼ A GSA senior staff member continues to serve on the NCS Major Focus Area (MFA) I Team to review and revalidate the NCS planning process.
- ▼ A GSA senior staff member continues to serve on the NCS MFA III Team. GSA's contribution ensured that the NCS developed a set of NS/EP products and services that meet organization and national requirements, and are responsive to changing geopolitical and economic conditions, as well as technological developments.
- ▼ GSA participated in the WHCA Coordinating Committee, which addressed ways to employ Federal Government-owned and leased assets and contracts, to ensure the continuity of communications for the President and Vice President of the United States.
- ▼ GSA's consolidated local services and FTS2000 continue to serve as the prime transmission media to provide telecommunications support to the largest flood in the last 100 years in the Midwest. GSA continues to monitor and report on disaster operations and activities for all ongoing situations.
- ▼ A GSA senior manager participates as a member of the TSP Oversight Committee. Issues relating to the utilization of TSP by State and Federal users have been identified and resolved.
- ▼ Five POTS replacement contracts are anticipated to be awarded in FY94.

Readiness Improvement

- ▼ An analysis of current disasters, particularly Hurricane Andrew, has underscored the need to provide closer coordination and training for all

employees involved in disaster response. To meet this need, GSA was instrumental in developing a Telecommunications Emergency Response training program, in conjunction with the NCS, for all national and regional Federal Emergency Communications Coordinators and their emergency communications staffs. The first session was held in Region 4, Atlanta, Georgia. The second session was held in Region 5, Chicago, Illinois, with sessions to follow in the remaining GSA regions.

- ▼ A senior GSA manager continues to participate on the National Security Telecommunications and Information Systems Security Committee (NSTISSC).
- ▼ GSA representatives continue to participate on the FTSC. GSA approved a standard on HF Radio Automatic Operation in Stressed Environments, Linking Protection. GSA has proposed two new standards, one on HF radio ALE, and one on HF radio automatic networking.

UNITED STATES INFORMATION AGENCY (USIA)



MR. GARY W. BARNETT
COMMITTEE OF PRINCIPALS/
COUNCIL OF REPRESENTATIVES



NS/EP TELECOMMUNICATIONS MISSION

USIA Voice of America (VOA) Broadcast System is validated as an NCS asset and available to the NCS primarily during international emergencies. The Radio Broadcast System, which provides worldwide coverage, is equipped with high-powered broadcast transmitters and a staff to coordinate program schedules, facilities, and circuits. The entire staff is available to operate the network with programming material provided by the NCS or its designated representative.

TELECOMMUNICATIONS STAFF ORGANIZATION

The Agency's telecommunications element assigns members to the NCS COP/COR. The Director of the USIA assigned the authority to implement NS/EP procedures to the COP.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

The VOA continues to update its facilities and procedures to ensure operations during an international emergency. These updates are comprehensive and cover localized events such as demonstrations in Washington, DC, and localized emergencies, such as fires and bombs; and international emergencies, such as terrorist incidents, and conventional and/or nuclear war. All actions required under NS/EP and TSP procedures are being accomplished in close coordination with day-to-day operating facilities that must be operational in emergency conditions. Interoperability considerations are addressed at the time of validation by the NCS.



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)



MR. CHARLES T. FORCE
COMMITTEE OF PRINCIPALS



MR. ARTHUR L. C. SIGUST
COUNCIL OF REPRESENTATIVES

NS/EP TELECOMMUNICATIONS MISSION

"The Administrator of the National Aeronautics and Space Administration (NASA) shall (pursuant to E.O. 12656) coordinate with the Secretary of Defense to prepare for use, maintenance, and development of technologically advanced aerospace and aeronautical-related systems, equipment, and methodologies applicable to national security emergencies."

NASA's Associate Administrator for the Office of Space Communications (OSC) has programmatic responsibility for representing the organization, on behalf of the Administrator, in the NCS process. The OSC plans, develops, acquires, and operates world-wide tracking, communications, and data facilities and provides essential services to the flight projects of NASA and other Government organizations. These projects encompass planetary spacecraft, earth-orbiting satellites, space shuttle missions, sounding rockets, balloons, and aeronautical test vehicles.

The following NASA NS/EP telecommunication assets support NASA's mission-critical (operational, administrative, and programmatic) EEF's, under the Space Act of 1958, as amended; E.O.'s 12472 and 12656; National Security Decision Directives (NSDD) 47 and 97; and National Security Directive 56:

- ▼ NASA Operational Communications System (Nascom)
- ▼ NASA Tracking and Data Relay Satellite System (TDRSS)
- ▼ NASA Program Support Communications Network (PSCN).

TELECOMMUNICATIONS STAFF ORGANIZATION

Exhibit 4-5 shows the NASA staff elements that have programmatic responsibility for Nascom, TDRSS, and PSCN. The Space Network Division is responsible for TDRSS, and the Communications and Data Systems Division manages Nascom and PSCN.

SIGNIFICANT ACCOMPLISHMENTS

NASA continued supporting the NCS in achieving its Presidentially approved mission, goals, and objectives as required by E.O.'s 12472 and 12656, and NSDD's 47 and 97.

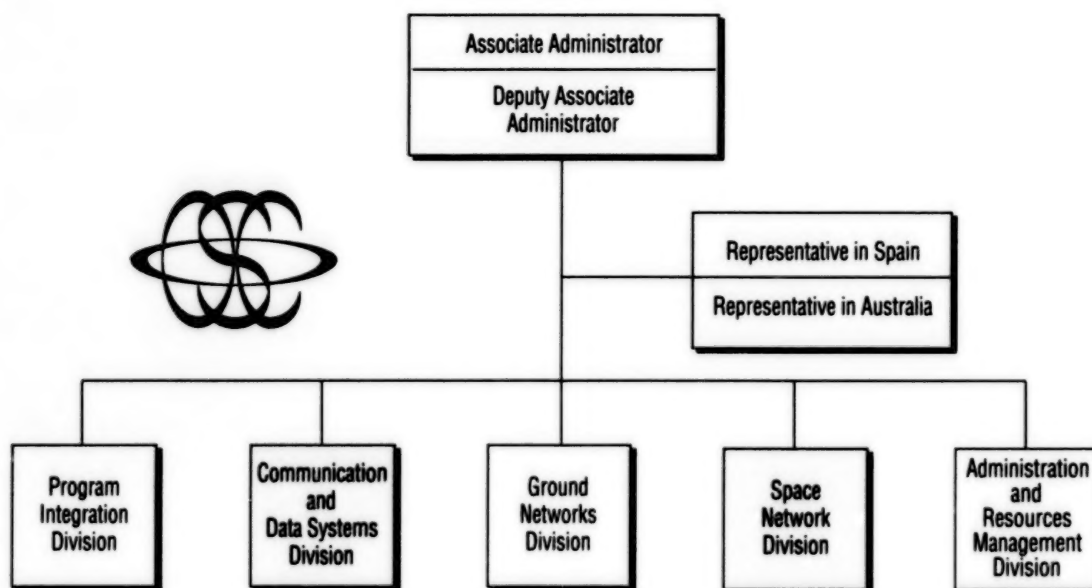
Nascom

NASA's mission operational telecommunications network provides communication services used in the operational conduct of flight missions, programs, and projects. It is largely spaceflight oriented, but also includes the lines and facilities supporting aeronautical and aerodynamic flight research projects and flight test programs. Nascom interconnects NASA's foreign and domestic tracking and telemetry acquisition sites, launch areas, and mission facilities, and control centers. Loss or degradation of these telecommunication lines and facilities could directly affect mission success or safety of life or property.

TDRSS

NASA now has five on-orbit TDRSS satellites in its space network. Three are fully operational and two are partially functional. This constellation of geostationary tracking satellites supports classified and unclassified customers, and it provides almost uninter-

EXHIBIT 4-5
NASA Staff Elements Responsible for Nascom, TDRSS, and PSCN



rupted communications with earth-orbiting space shuttles and other supported customer satellites. TDRSS-1 is located at 171 degrees west longitude; and TDRSS-3, TDRSS-4, TDRSS-5, and TDRSS-6 (launched in January 1993) are located at 62, 41, 174, and 150 degrees west longitude, respectively.

PSCN

NASA's PSCN provides communication services used in the day-to-day intercenter administrative and program support activities. The network interconnects all NASA field installations, major contractor and university sites, and NASA's international partners.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

NASA continues to be an active participant in the NCS COP/COR, Vision 21/TQM, and the NSTAC processes. The NS/EP telecommunication activities during FY93 included:

- ▼ **OMNCS Manpower Support.** NASA continues to provide personnel resources to the Manager, NCS.
- ▼ **NASA/SHARES Emergency Network.** NASA continued its participation in the NCS SHARES program by participating in the various SHARES exercises held throughout the year. Under the operational management of NASA, the Ames Research Center's (ARC) Disaster Assistance and Rescue Team's emergency communications group leader, ARC distinguished itself by rendering contingency emergency communications services during the initial critical days after Hurricane Andrew struck southern Florida and Louisiana.
- ▼ **NASA ARC Disaster Assistance and Rescue Team (DART).** At the request of FEMA, DART was deployed to Hawaii to render emergency assistance due to the effects of Hurricane Iniki during this reporting period.

Because of the team's national and statewide

efforts and its local community support in emergency preparedness, the DART team was awarded the "Exceptional Service Award" from the State of California's Emergency Services Association in October 1992.

▼ **NCS/NASA "NS/EP HF Frequency**

Telecommunications Technical Support Arrangement (TSA).

NASA's Associate Administrator for Space Communications and the Manager, NCS, consummated this TSA to formalize NASA's support of the NCS NTMS Program. This program will ensure the provisioning of an affordable and survivable telecommunications infrastructure and the diversity of assets to satisfy national leadership requirements over a wide range of likely contingencies.

NASA's HF stations at NASA ARC, California, NASA Kennedy Space Center, Florida, NASA Lewis Research Center, Ohio, NASA Goddard Space Flight Center (GSFC), Maryland, and ARC's DART resources form the core assets approved by NASA.

▼ **NCS Enhanced Satellite Capability (ESC)**

Program. NASA participates in the ESC program of the NCS with experimentation efforts involving NASA's Advanced Communication Technology Satellite (ACTS).

The ACTS was launched in September 1993, and tested with its variety of ground terminals over the remainder of the year. The experiments program will begin in January 1994. Currently, there are 78 approved experiments involving 92 investigators, with 39 from industry, 28 from universities, and 25 from Government agencies. The satellite will be fully occupied for its first 2 years of operation.

▼ **NASA's Information Systems Security**

(INFOSEC) Posture. Because of the rapid introduction of new telecommunication technologies and, as a result of the broad public policy consequences of National Security Directive 42 (Secret) and Public Law 100-235, NASA's Automated

Information Security (AIS) Program Management Team has continued to make significant achievements during fiscal years 91, 92, and 93. As a result of the program's development and implementation of credible AIS management tools and techniques, NASA has consistently received high marks of excellence and recognition from the Office of Management and Budget, NIST, and NSA. Also, NASA Headquarters accepted the NSA Director's invitation to participate in the fourth annual Information Systems Security National Awards Program during this period. NASA's NCS COP official nominated NASA's GSPC, in Greenbelt, Maryland, for a "Frank B. Rowlett Trophy."

▼ **TSP System Program.** NASA has completed its transition from the old Restoration Priority System to the new Telecommunications Service Priority System during this period.

▼ **NASA EP Program.** Day-to-day programmatic responsibility for this function resides in NASA Headquarters Office of Safety & Mission Assurance (Code Q).

During this period, NASA's Emergency Preparedness Program Manager, under the auspices of the Catastrophic Disaster Response Group and its Federal Response Planning Task Force, ensured that NASA, in coordination with FEMA/DoD, carried out its assigned role and responsibilities pertaining to the timely and effective use of airborne and/or space flight sensors to assess the damage caused by the flooding of the Mississippi River in the States of Illinois and Missouri.

NASA participated in the planning and implementation of an NS/EP exercise involving a simulated catastrophic earthquake on the Wasatch Fault near Salt Lake City, Utah, during this period. This required cooperation with Federal and NASAwide Headquarters and field-level emergency preparedness officials.

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)



MR. BRUCE J. CAMPBELL
COMMITTEE OF PRINCIPALS



MR. PAUL B. MAISON
COUNCIL OF REPRESENTATIVES



NS/EP TELECOMMUNICATIONS MISSION

FEMA has comprehensive responsibilities in managing the civil aspects of emergencies affecting the United States. FEMA assists the national emergency management authorities and other key Federal decision makers by providing the information base and communications media to support decision making and implementation at the highest levels of the Government. FEMA information systems support the performance of the full range of information requirements in every phase and type of mission activity associated with emergency management. They are referred to in total as the FEMA National Emergency Management System (NEMS) (see Exhibit 4-6). Due to FEMA's significant emergency management mission across the broad spectrum of emergencies, its information systems are developed in accordance with the guidelines of NSDD 97 and E.O.'s 12472 and 12656.

TELECOMMUNICATIONS STAFF ORGANIZATION

Most of FEMA's telecommunication functions are performed by the National Preparedness Directorate (NPD), which is depicted in Exhibit 4-7. The Office of Information Resources Management supports the Agency's IRM function, and operates and maintains NPD programs and national systems, as well as agency administrative information systems. The Office of Systems Engineering designs, develops, acquires, and tests new information systems concepts and capabilities for FEMA. The Office of Operations carries out the warning and operations functions.

The State and Local Programs and Support

Directorate provides financial and technical assistance to State and local offices of emergency management for the enhancement of their emergency preparedness telecommunication capabilities. Assistance is provided in the areas of design, development, acquisition, operation, and maintenance of emergency management facilities to ensure reliable, interoperable, and survivable emergency telecommunication capabilities at State and local levels of government.*

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

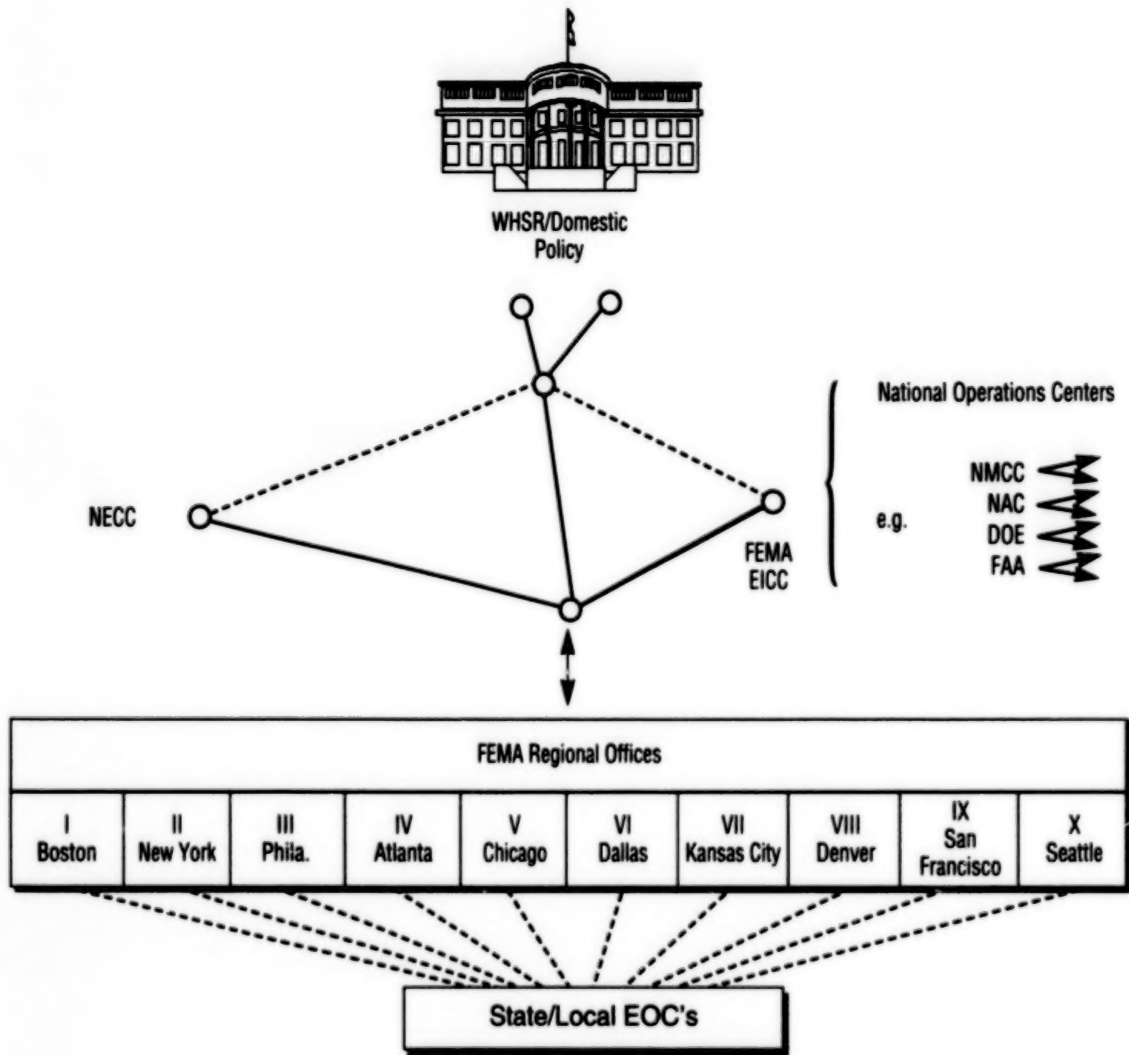
The FEMA NEMS includes the following major elements:

FEMA Federal Emergency Support Capability (FESC)

The FESC is the mobile operations and communications capability that keeps emergency management information flowing when a Federal response is required in any disaster or emergency. The FESC supports Federal, State, and local response efforts by providing communications and information on the scene of a disaster, and is a link to the FEMA NEMS. The FESC consists of the Mobile Emergency Response Support (MERS) detachments, the Mobile Air Transportable Telecommunications System (MATTS), the Information Display System (IDS), and the portable private automatic branch exchange (PABX) systems from the National Network Operations Center (NNOC).

* Effective November 28, 1993, FEMA was reorganized with NS/EP Telecommunications Mission transferred to the new operations support directorate.

EXHIBIT 4-6 FEMA National Emergency Management System



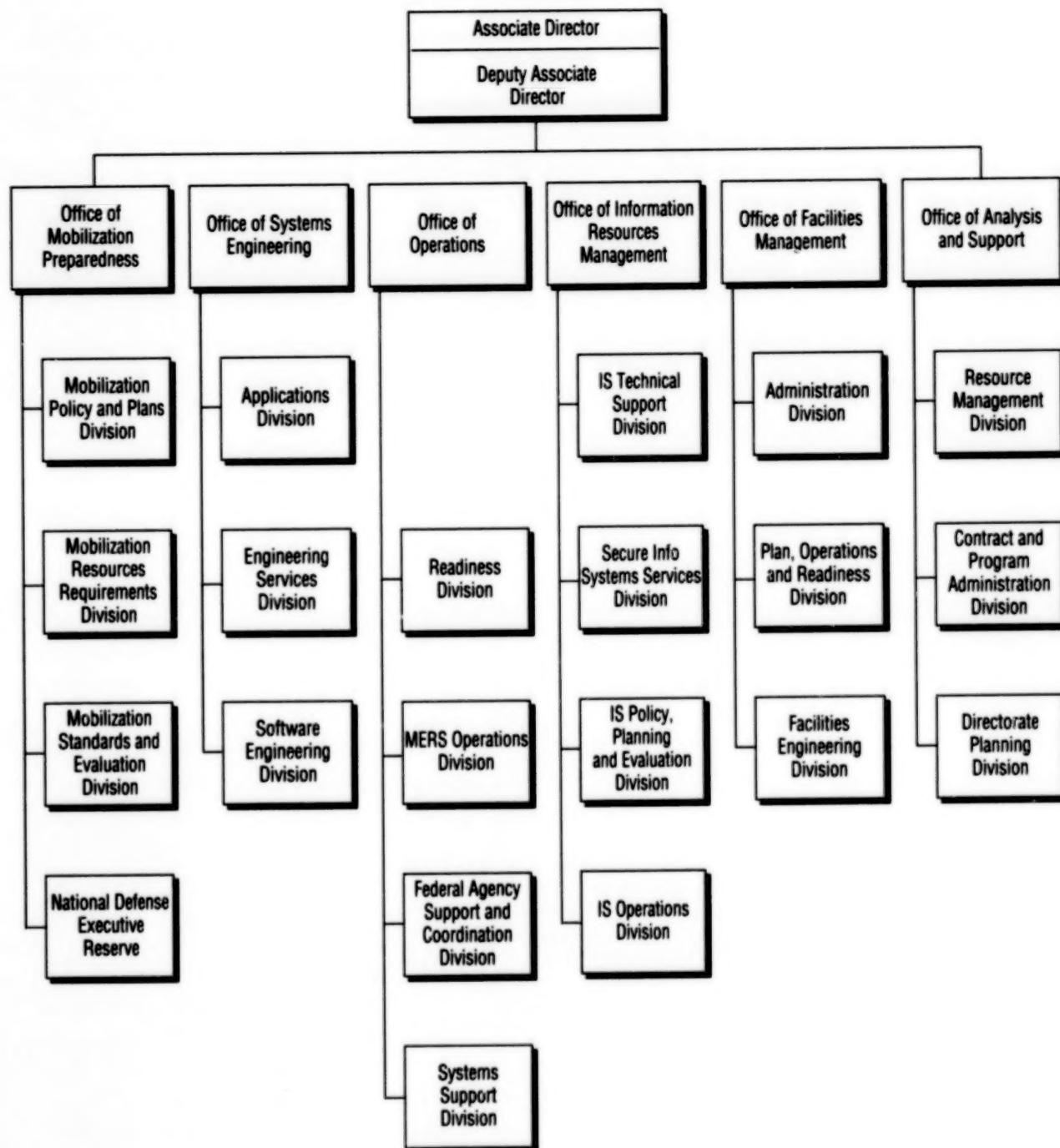
FESC resources may be deployed as a complete package or as stand-alone systems.

FEMA Mobile Emergency Response Support

The MERS capability is the mobile extension of the fixed FEMA Switched Network (FSN) and is provided by five MERS detachments located in Bothell, Washington (BT); Denton, Texas (DT); Denver, Colorado (DV); Thomasville, Georgia (TV); and Maynard, Massachusetts (MA). Each MERS detachment has a transportable disaster communications system

composed of modular elements that can provide a Disaster Field Office (DFO) with voice, facsimile, message, and data communications over a variety of media in both secure and nonsecure modes. The MERS communications systems include digital PABX; message switches to interface with both secure and nonsecure message networks; HF, VHF, and UHF radios; microwave line-of-sight transmission systems; Ku-band satellite communications systems; and self-contained power generation and distribution systems.

EXHIBIT 4-7
National Preparedness Directorate



An effort is underway to modernize the MERS PABX's, which will provide smaller, lighter, and more portable systems. The new equipment will provide dynamic band-width allocation, Local Area Network (LAN)/WAN router interfaces, and trunk encryption using the Remote STU-III (STU-III R). The Multi-Radio Van (MRV) contains a small cross-section of all systems in a single, self-contained vehicle. The MRV can provide a communications interface to the FSN from a remote disaster site via the Ku-band satellite system using industry-standard T-1 transmission facilities. In support of Hurricane Andrew disaster operations, MERS-MA and elements of MERS-TV arrived at the DFO on August 26, 1992. MERS-TV provided personnel to install telephone wiring and support service to the overall DFO telephone system. Even before the hurricane made landfall in Louisiana, the Federal Coordinating Official (FCO) directed the MERS-DT detachment to deploy with him to the DFO at Camp Beauregard, Louisiana. Upon arrival, the detachment provided immediate telephone service to the DFO. Using the Ku-band Satellite System and the MERLIN PABX from the MRV, the detachment provided full communications to the DFO with an activity level of 120 messages an hour. On August 29, 1993, with its initial mission completed, the detachment moved to New Iberia, Louisiana, where it provided communications support until ordered to Florida. During this same period of time, elements of the MERS-DV detachment were providing communications support to the Franklin, Louisiana, Disaster Assistance Center (DAC). Its assignments included providing telephone lines to the DAC and, using its generator sets, to provide electric power to the only operating medical clinic in the Parish. Early in September, when emergency conditions in Louisiana had eased, elements of the MERS-DV were deployed to Florida to assist in operations in that disaster area. The remainder of the MERS-DV remained in Denton, Texas, in a stand-by mode. MERS-DV provided air conditioning for the American Red Cross Assistance Center at the Point Royal shopping center in Miami; MERS-TV and MERS-DV provided the DFO with uninterruptable power for more than

250 personal computers; MERS-TV provided 24-hour telephone service and electrical power to the NDMS field hospital in Homestead, Florida. During the mid-west floods of 1993, MERS supported numerous State and local disaster operations by providing backup communications equipment and specialists to assist in the installation and maintenance of communications and ADP systems. In preparation for Hurricane Emily, the Thomasville, Georgia, MERS was deployed to Fort Bragg, North Carolina, and the Maynard MERS was deployed to Richmond, Virginia. Following Hurricane Emily, MERS provided satellite and other communications links in support of North Carolina State emergency operations. The MERS detachments supported the following exercises during the past year: Exercise Response '93, Chemical Stockpile Emergency Preparedness Planning Exercises, the Tennessee New Madrid Fault Earthquake Exercise, and World Youth Day in Denver, Colorado.

FEMA Mobile Air Transportable Telecommunications System

MATTS is an air mobile system designed to provide communications for any emergency requirement. MATTS communications capabilities include voice and data via landline, HF/VHF/UHF radio, and a variety of satellite systems in the secure and nonsecure modes. An integral part of MATTS is the telephone switchboard, which is capable of providing 48 trunks and a T-1 link to 88 subscribers. MATTS can also provide nonsecure voice, data, and video communications when used in conjunction with its T-1 via a Ku-satellite link. MATTS is self-contained, provides its own power source, and is air transportable on either C-130 or C-141 aircraft. Along with MERS elements, MATTS arrived at the DFO on August 26, 1993, where it assisted in the installation of telephone service. Because MATTS equipment remained loaded for rapid deployment deeper into the disaster area, it was not used at the DFO in Miami. MATTS and MERS personnel repaired generators, serviced air conditioners, distributed truckloads of canned food and hot meals, delivered bedding and blankets to the Miccosukee Indian

Reservation, and provided essential transportation for a medical team. The MATTS team was then deployed to Florida City where it set up operations and began assisting the downtown Florida City DAC with telecommunications through the use of INMARSAT terminals and available cellular telephone service. When an additional DAC was established on U.S. Route 1, MATTS and MERS-MA personnel erected tents and helped to ready the DAC for operations. MATTS provided INMARSAT communications capability, as well as limited cellular service. MATTS personnel also set up a MERLIN switchboard that used the MERS line-of-sight (LOS) to provide telephone service to the DAC. In mid-September, the MATTS was deployed to Hawaii to provide support to the DFO after Hurricane Iniki's devastation. In December 1992, the MATTS was deployed to the northwest area of Washington, DC, to provide emergency telephone communications for Operation Safe Recovery, an effort led by the U.S. Army Corps of Engineers to locate and defuse a cache of military ammunition. During the course of the year, the MATTS conducted various demonstrations of its capabilities to groups of students attending the National Emergency Training Center (NETC) at Emmitsburg, Maryland.

FEMA Information Display System

The IDS accesses and displays information that is critical to emergency management officials. Information is provided in three forms: graphics, digital mapping, and still image video. The system consists of PC workstations interconnected via a LAN, video projectors, and a sound system. The PC workstations can use off-the-shelf or custom-designed software applications to produce briefings, reports, or action-tracking products, or can receive data from outside resources through the use of modems. The system can be deployed as a stand-alone unit or in conjunction with MATTS. The IDS began the year by supporting the Armed Forces Inaugural Committee at the Washington Navy Yard. During June and July, the IDS supported the operations center set up in the Buffalo, New York area, for the World University Games. In August, the IDS was

deployed to Denver, Colorado, to support World Youth Day/Papal visit activities.

FEMA Switched Network

The FSN is a terrestrial-based voice and data network linking FEMA Headquarters, the NETC, and the National Emergency Coordination Center (NECC) with the FEMA regional offices, Federal Regional Centers (FRC), State EOC's and civil defense offices, the Flood Insurance Administration, and the National Tele-registration Centers. The system, which is the backbone of the NEMS, consists of 14 System 85 PABX's, two Meridian switches, and four Number 5 Electronic Switching Systems (ESS) central offices interconnected with T-1 links to form an Electronic Tandem Network (ETN) that fully integrates the voice and data communications required for emergency and day-to-day use. The network offers ISDN, and end-to-end digital dial service with automatic route selection and automatic alternate routing. Centralized management of the FSN is conducted from FEMA's NNOC, located at the FEMA Special Facility. Also available for deployment to disaster sites are portable PABX's. Since Hurricane Andrew, 19 PABX's have been deployed, along with technicians, in support of disaster operations. The FSN has also been reconfigured to allow extension to DFO's and DAC's to provide instant support for 800-service hotline support to remote locations. This capability allows for immediate robust remote data entry and swift processing of disaster assistance applications, as well as other disaster response activities.

FEMA National Automated Message System (FNAMS)

The FNAMS is the record store and forward message system capability of the NEMS and is the only record system linking the Federal Government with State Emergency Operating Centers. Twelve fixed sidereal switches provide service to FEMA Headquarters, the regions, and State EOC's. Five transportable sidereal switches are part of the MERS emergency response capability. These five switches provide full FNAMS message service from DFO locations. The system pro-

vides FEMA with an infrastructure message service that includes the capability to transmit a single message to multiple subscribers simultaneously. User interface was enhanced by upgrading all terminals to PCS and incorporating new software.

FEMA National Radio System (FNARS)

The FNARS is the nationwide HF network that links FEMA Headquarters, the regions, and State EOC's. The system, approximately 75 percent complete, consists of Harris 10KW transmitters at the Network Control Station and FEMA regional facilities, and Harris 1KW transmitters at primary State EOC's. The FNARS is the primary HF network used to coordinate disaster response and recovery activities in the United States and other emergency management activities involving States and the Federal Government, and serves as a backup network for the FSN. FEMA also sponsors State EOC's desiring to participate in the NCS SHARES program. The FNARS net control maintains a 24-hour watch on two nationwide calling channels and maintains a pool of contingency call signs for distribution to other Federal agencies in support of their operations. FEMA's HF radio modernization program continued with the upgrade of many stations to add ALE in compliance with Federal Standard 1045. Work also progressed on the development of a prototype Communications Control Software (CCS) remote control package.

FEMA Facsimile and Record System

FFARS is a high-speed, secure PC-based and facsimile transmitter/receiver telecommunications workstation. The system transmits and receives classified record message traffic among FEMA and other Federal departments and agencies using dial-up telephone lines secured with KG84 COMSEC equipment. It processes photographic images, drawings, special document formats, and narrative text.

FEMA DEC VAX Computer Systems

These systems provide and operate data bases, information processing capabilities, and information pro-

cessing displays for FEMA's Emergency Information Coordination Center (EICC), NECC, NNOC, and the Regional Computer System (RCS) located at each of the FRC's. These minicomputer systems also support simultaneous users over secure communications links from various FEMA locations. Some of these systems support graphic displays for such uses as electronic data base mapping requirements at disaster sites.

Local and Wide Area Network Development Project

The FEMA NEMS LAN/WAN provides the FEMA user community with a nationwide, integrated PC-based network capability for unclassified and secure data communication and processing, office automation, and financial accounting utilizing the System 85 and T-1 carrier capabilities of the FSN. PC-based standard terminals are being integrated into LAN's and interconnected into a FEMA WAN, which provides gateways to FEMA national computers and inter-/intra-regional connectivity, as well as stand-alone capabilities. FEMA developed and installed eight more LAN's for a network total of 16. Three additional LAN's will be developed and installed during FY94.

FEMA Secure Voice Program

The FEMA Secure Voice Program provides secure telephone service among FEMA locations and State and territorial EOC's. FEMA has installed 2188 STU-III's in locations at FEMA Headquarters; the Special Facility; the Federal Support Center, Olney, Maryland; all FEMA regions; the National Warning Center; State EOC's; FEMA's Caribbean Office in Puerto Rico; FEMA's office in Hawaii; and FEMA contractors.

National Warning System (NAWAS)

The NAWAS is a leased, dedicated, nonsecure voice network connected to about 2,300 terminals throughout the United States. It was originally designed to disseminate attack warning messages. Over the years, however, it has been used, and continues to be used, extensively during natural disasters and seawave and severe weather warnings to furnish information to Federal, State, county, and city officials. These officials,

in turn, disseminate the warning to the population by local warning systems, the EBS, sirens, and public service radio.

Emergency Broadcast System

The EBS provides the President of the United States with an expeditious method of communicating with the American public in the event of war, threat of war, or a grave national crisis. The EBS may also be used by Governors during day-to-day emergencies at State and local levels for prompt, reliable receipt and release of life and property-saving warning and emergency information. The EBS is composed of more than 12,000 participating radio and television stations and networks, which are linked into a single nationwide network for simultaneous broadcasts. Upgrade of the Emergency Action Notification Network was completed. Development of a design to replace the Last Resort System was completed with the successful testing of a prototype of the new Primary Entry Point (PEP) system. Installation of the PEP system is planned for FY94.

FEMA Emergency Education Network (EENET)

The EENET is a one-way video, two-way audio, satellite-distributed, point-to-multipoint national videoconferencing network operated from FEMA's NETC. The network provides regularly scheduled emergency training and education to Federal, State, and local emergency managers, and to thousands of local public and private facilities.

FEMA Frequency Management System (FFMS)

The FFMS is an automated system that improves management of the FEMA radio frequency assignments and operations. Its features include an emphasis on user friendliness and sophisticated frequency engineering modeling programs. The ongoing enhancement of the FFMS will bring into use powerful interference analysis programs integrated with video and digital mapping capabilities making it possible to conduct large-scale

mobile emergency operations and exercises without disrupting normal radio frequency systems. The FFMS will be fully integrated with automated frequency management improvements as they are planned and implemented by the Federal departments and agencies participating in the Interdepartment Radio Advisory Committee (IRAC). During Hurricane Andrew, FEMA's Frequency Management Office coordinated HF and VHF authorizations for the Florida and Louisiana areas for radio communications units supporting disaster operations. FEMA also provided a Field Frequency Management Coordinator.

Telecommunications Service Priority System

FEMA is the Federal sponsor for State and local government agencies desiring to participate in the TSP system. Activities included TSP Oversight Committee meetings, development of a TSP Interactive Software System, and receipt of the California and South Carolina TSP State Implementation Plans, which were developed with FEMA assistance.

PENDING ISSUES

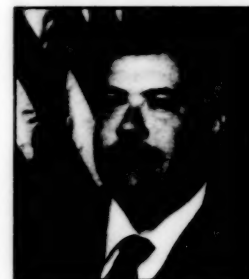
As telecommunication technologies become obsolete, efforts to modernize complex information systems and telecommunication networks must continue in light of the increasing need for such services. Another issue FEMA must address is how NS/EP telecommunications will fit into the new National Information Infrastructure, which is currently under development.



FEDERAL COMMUNICATIONS COMMISSION (FCC)



MR. ALAN R. MCKIE
COMMITTEE OF PRINCIPALS



MR. TERRY D. JOHNSON
COUNCIL OF REPRESENTATIVES

NS/EP TELECOMMUNICATIONS MISSION

The FCC, consistent with Section 4(c) of E.O. 12472, performs the following NS/EP functions:

- ▼ Reviews the policies, plans, and procedures of all entities licensed or regulated by the FCC that provide NS/EP communication services, to ensure their consistency with public interest, convenience, and necessity
- ▼ Develops policy, plans, and procedures to execute the responsibilities assigned in E.O. 12472 under all conditions of a crisis or emergency
- ▼ Consults, as appropriate, with the Executive Agent, NCS, and the NCS COP/COR to ensure continued coordination of NS/EP activities.

SIGNIFICANT ACCOMPLISHMENTS

The FCC realized the following achievements:

- ▼ Cooperated with the NCS in carrying out shared responsibilities under the TSP system. A Commission staff member is assigned to the NCC on a part-time basis. This liaison officer contributed to improvements in the TSP data base and the TSP report generation system.
- ▼ Worked with its industry advisory committee, the Network Reliability Council, to improve the reliability of the Nation's telecommunications. This approach has resulted in greater cooperation within the industry to improve network reliability. Refinements in outage reporting have also been recommended and implemented.

- ▼ Provided current copies of common carrier outage reports to the NCS through the FCC liaison officer. Because the major common carriers also have representatives on site, the NCC has served as a useful focal point for cooperation and information exchange. The FCC continues to monitor network outages and to take steps to reduce their occurrence.
- ▼ Participated in meetings and activities of the Toll Fraud Prevention Committee of the common carrier industry Network Operations Forum (NOF).
- ▼ Added seven new stations to the EBS PEP Project, including Alaska, Hawaii, and the Trust Territories. Communications equipment is being installed to link these stations with Government in coordination with FEMA.
- ▼ Reviewed 10 revised State EBS plans and 55 local plans. Received 2,032 EBS activation reports in 1993. Completed one national EBS close-circuit test, originated by the WHCA.
- ▼ Accepted comments on a Notice of Proposed Rulemaking concerning a new EBS signaling device and configuration; the new system will include cable television systems.
- ▼ Completed two field tests of proposed EBS systems in Denver, Colorado, and Baltimore, Maryland.
- ▼ Advised and assisted in the continuing development of the PEP Project and the Emergency Action Notification (EAN) network.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

As Defense Commissioner of the FCC, Andrew C. Barrett provides overall direction and guidance for the Commission's NS/EP activities. He keeps the Chairman and other commissioners abreast of any emergency matters requiring their attention, and represents the FCC in the deliberations of the JTRB.

In accordance with the mandate of E.O. 12472, the FCC continues its NCS role as a liaison member; regulatory and adjudicatory functions do not permit the FCC to act as a regular voting member. FCC representatives participate in meetings of the NCS COP/COR. An FCC liaison officer is assigned on a part-time basis to the NCC to facilitate the exchange of information during crises and emergencies, and to ensure expedited action by the Commission on requests for emergency authorizations or waivers of the rules. This liaison also provides status information on various FCC activities and explains FCC procedures at industry/Government meetings.

In addition, the FCC is represented at meetings of the NSTAC and the NSTISSC. The FCC also provides a liaison to Ad Hoc 134 of the IRAC; continues to participate in the activities of the NTMS, the Network Security Information Exchange (NSIE), and the Government Network Security Subgroup (GNSS); and participates in all meetings of the Subcommittee on Federal Earthquake Response Planning, providing assistance to various FEMA regions as needed. Work continues on implementing the EBS PEP Project, upgrading the EAN network, and updating all State and local EBS plans.

Within the FCC, efforts continue to sensitize bureaus and offices to the NS/EP telecommunication consequences of their regulatory activities. Each bureau or office must develop an impact statement describing the effect of proposed actions on NS/EP. The NS/EP impact is considered by the commissioners in their deliberations along with legal, regulatory, economic, technical, and administrative factors.

PENDING ISSUES

During FY94, the FCC will perform the following:

- ▼ Continue to work with the NCS to improve the effectiveness of the TSP system
- ▼ Continue to monitor the "hacker" threat to the PSN through participation in the GNSS
- ▼ Continue to participate in the Toll Fraud Prevention Committee of the NOF
- ▼ Continue to monitor network outages and take steps to reduce their occurrence
- ▼ Continue to advise/assist in development of the PEP Project and the EAN upgrade
- ▼ Finalize requirements to upgrade the EBS signal.



NUCLEAR REGULATORY COMMISSION (NRC)



MR. GERALD F. CRANFORD
COMMITTEE OF PRINCIPALS



MS. PAMELA G. KRUSIC
COUNCIL OF REPRESENTATIVES

NS/EP TELECOMMUNICATIONS MISSION

The mission of the NRC is to ensure that civilian use of nuclear materials and facilities is conducted in a manner consistent with public health and safety, and to protect environmental quality, assure national security, and adhere to antitrust laws. The NRC accomplishes this through the licensing of nuclear facilities, licensing of the possession and use of nuclear materials, the issuance of rules and regulations governing licensed activities, and the inspection and enforcement of actions. The NRC's NS/EP telecommunications mission provides assured and reliable communications between the NRC Operations Center (NRCOC), operating nuclear power plant control rooms, and regional incident response centers. This connectivity ensures immediate notification to the NRCOC of unusual occurrences and provides relevant information during events at nuclear facilities. The Director, IRM, represents the NRC on the NCS COP. The Director, Division of Computer and Telecommunications Services represents the NRC on the NCS COR.

SIGNIFICANT ACCOMPLISHMENTS

FTS2000 service (seven lines to each nuclear power plant and associated emergency operations facilities) has been installed at all nuclear power plants in place of the NRC's Emergency Notification System, which consisted of service via the public switched network and a single dedicated circuit between each nuclear reactor site and the NRCOC.

Critical nuclear power plant FTS2000 circuits have been assigned TSP.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

As a backup to the FTS2000 service, the NRC has expanded its emergency communications response capabilities with the use of INMARSAT terminals. The interagency agreement with the Department of Interior's Boise Fire Center has been expanded to increase the number of response teams provided in an emergency from two to three. In addition, two terminals have been prepositioned at NRC Regional Offices in Atlanta, Georgia, and King of Prussia, Pennsylvania. The NRC continues to investigate backup telecommunication alternatives to ensure uninterrupted service to commercial nuclear power plants. Current activities include the testing of HF radio, and studies to determine the feasibility of utilizing satellite and/or wireless communications at these facilities.

UNITED STATES POSTAL SERVICE (USPS)



MR. TIMOTHY J. PATTERSON
COMMITTEE OF PRINCIPALS/
COUNCIL OF REPRESENTATIVES



NS/EP TELECOMMUNICATIONS MISSION

The Postal Service has not been assigned specific NS/EP telecommunication responsibilities in the event of a national emergency or other declared disaster. Therefore, USPS telecommunication systems and services were designed to support day-to-day organizational and operational mission requirements; telecommunication facilities dedicated specifically to NS/EP are limited in scope.

SIGNIFICANT ACCOMPLISHMENTS

The following accomplishments will enhance the ability of USPS to support the overall NS/EP mission:

- ▼ Converted more than 360 USPS major field locations to FTS2000 (Network A) service. The majority of these implementations included Switched Digital Integrated Service (SDIS), Switched Voice Service, Dedicated Transmission Service (DTS), and Virtual On-Net services. The Postal Service is a voluntary user of FTS2000 services, and implements services when a business case supports this connectivity. The use of FTS2000 services, where cost-effective, has saved about \$400,000 per month over previous services.
- ▼ Participated in Beta testing Frame Relay data transmission service through existing FTS2000 (Network A) SDIS connectivity. The five-location test, involving routing multiple protocols through a single transmission service, proved highly successful. As a result of the successful testing of this service, the Postal Service plans to implement a private frame relay backbone at 15 locations during FY94.
- ▼ Established an ordering agreement for assignment of a single Primary Interexchange Carrier (PIC) for national and international long distance service. Competitive award to Sprint includes use of FON CARDS (Sprint proprietary telephone credit cards) for traveling executives. This cost-effective, standard long distance service was implemented at about 3,000 USPS field locations.
- ▼ Established standard telephone system contracts with Witel Communications Systems (Northern Telecom systems/equipment) and Government Telecommunications, Inc., (AT&T systems/equipment). USPS awarded more than 40 Northern Telecom Meridian 1 Electronic Digital Private Branch Exchange systems and more than 500 AT&T Partner series and Legend key systems. Each system award is based on competition with the serving local exchange carrier for nonpremise-based telephone service, using a detailed systems life cost model. The standardization of systems and equipment, and the streamlined approach to the competitive phase is expected to save more than \$10 million over the contract life.
- ▼ Awarded contract for a wide range of multiprotocol routers and bridges to be deployed in the Postal Service data network. These devices will support all current wide area network protocols and provide a mitigation platform for local area network interconnection. Significant deployment and conversion of the existing data network is planned for FY94.
- ▼ Awarded contract for local area network components for standardization of USPS local area net-

work architecture. All awarded equipment is Institute of Electrical and Electronic Engineers 802.3/10 base T compliant to support 10 megabits per second (Mbps) Ethernet using unshielded twisted pair transmission medium.

- ▼ Adopted a structured wiring standard for implementation in all new and renovated USPS facilities. The Universal Wiring Standard (UWS) provides a holistic approach to all cabling infrastructures within a facility. This wiring methodology includes telephone system, data terminal, video surveillance, sensors, heating, ventilation, air conditioning, and lighting control. The concept has reduced costs of moves, adds, changes, and disconnects of services over the life of the cable plant. The UWS standard includes the use of Category 5 cabling and components to support future implementation of a standards-based 100 Mbps transmission speeds for local area network connectivity.
- ▼ Implemented more than 40 standardized video conference locations. This tool has improved communications and planning functions while reducing costs and time lost due to travel. Additional video conference implementations are expected during FY94.
- ▼ Awarded a Value Added Network contract to GSI/Infonet. The services within this contract award include public and private dial-up data connectivity to packet switched service (X.25-based), protocol conversion, and international access. This service allows connectivity for data transmission for small volume user locations, where dedicated connectivity is not warranted or cost-effective.
- ▼ Completed work on refining an integrated voice and data computer model. This model is used for costs and architecture planning for the USPS 1995 wide area network architecture, which will support significant local area to wide area network connectivity.
- ▼ Developed and adopted a standardized technical architecture that defines the evolving computing and telecommunications infrastructure required in 1995 and beyond. This architecture follows a utility company model to focus on the infrastructure required to deliver a standard service suite to all users located in field facilities.
- ▼ Conducted tests of wireless voice and data architectures and equipment. More tests are scheduled in FY94. The Postal Service is planning several applications that will use the benefits of present and future commercial wireless technology.

FEDERAL RESERVE BOARD (FRB)



MS. LOUISE L. ROSEMAN
COMMITTEE OF PRINCIPALS



MR. KENNETH D. BUCKLEY
COUNCIL OF REPRESENTATIVES
NOT PICTURED

NS/EP TELECOMMUNICATIONS MISSION

The FRB does not have telecommunication assets listed as NCS primary assets because the significant telecommunication assets of the Federal Reserve are owned or leased by the Federal Reserve Banks, not by the FRB. The FRB's NS/EP responsibilities relate to the "maintenance of national economic posture," and, in particular, the "maintenance of national monetary, credit, and financial systems."

TELECOMMUNICATIONS STAFF ORGANIZATION

The Assistant Director for Automation, Communications, and Building Programs in the Board's Division of Reserve Bank Operations and Payment Systems has responsibility for oversight of the Reserve Banks' telecommunication services and serves as a liaison member on the NCS COP. The Manager of the Communications Section of the Division of the Reserve Bank Operations and Payment Systems serves as a liaison member on the NCS COR and the alternate member on the NCS COP.

The Director, Division of Information Resources Management, has responsibility for planning the Board's telecommunication services. The Director, Division of Support Services, has responsibility for the ongoing operations of the Board's telecommunication services.

SIGNIFICANT ACCOMPLISHMENTS

The FRB focused its NS/EP activities on its sponsorship role for assigning TSP status (priority level 4) to essential telecommunication services.

- ▼ The FRB continued to sponsor, for TSP assignment, circuits used for the Fedwire funds transfer and securities transfer services that connect the Federal Reserve Bank offices.
- ▼ The FRB adopted criteria that it will use to sponsor circuits used to connect certain depository institutions to the Federal Reserve's Fedwire system, as well as essential circuits used by private-sector large-value payments systems.
- ▼ The FRB will also sponsor for TSP assignment those circuits used by the Federal Reserve Bank of New York's open market operations and foreign operations, and circuits used to connect the large competitive bidders to the TREAS Automated Auction Processing System.
- ▼ The FRB has developed software that will be used by service users to automate the TSP application process; in addition, the FRB is submitting TSP applications to the OMNCS in automated form.

CURRENT/ONGOING NS/EP TELECOMMUNICATION ACTIVITIES

The FRB will continue its activities to facilitate TSP assignments for essential telecommunication services that support large-value payment systems, the Federal Reserve's open market operations and foreign operations, and the automated auction processing system for TREAS securities. The FRB will continue to support other NCS initiatives that improve the resiliency of essential telecommunication services necessary to maintain the Nation's financial systems.



NATIONAL SECURITY AGENCY (NSA)



MR. JOHN W. SAADI
COMMITTEE OF PRINCIPALS



MR. DAVID L. AUSTIN
COUNCIL OF REPRESENTATIVES

NSA's FY93 activities have been incorporated in the DoD report.

NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION (NTIA)



MR. RICHARD D. PARLOW
COMMITTEE OF PRINCIPALS



MR. WILLIAM A. BELOTE
COUNCIL OF REPRESENTATIVES



NTIA's FY93 activities have been incorporated in the DOC report.

V. NS/EP TELECOMMUNICATION ISSUES

Public Switched Network Security

ISSUE

Network security continues to be at the forefront of concern for the NS/EP telecommunications community. Network security is also one of the primary concerns of the National Information Infrastructure (NII), as expressed in the White House report "The National Information Infrastructure: Agenda for Action." The focus of interest among these groups is the vulnerability of the public switched network (PSN) to unauthorized software manipulation by electronic intrusion and other means that could result in disclosure of sensitive information from network data bases, or cause disruption to or denial of NS/EP services to critical users during times of crisis or emergency. It is this vulnerability of the PSN that presents a formidable threat to the security of information within network data bases and user information traversing the network.

BACKGROUND

In fiscal year (FY) 1990, the Chairman of the National Security Council's Policy Coordinating Committee for National Security Telecommunications and Information Systems, tasked the Manager, NCS, to determine what action is needed from Government and the telecommunications industry to address the threat presented by hacker intrusions into the PSN. During FY93, the Government Network Security Subgroup (GNSS) and the President's National Security Telecommunications Advisory Committee (NSTAC) through the Government and industry Network Security Information Exchange (NSIE) groups, worked together to define and address network security issues.

At NSTAC XIV, the Chairman of the Network

Security Task Force (NSTF) briefed committee members in a closed session regarding the status of the threat to the PSN from unauthorized users. During the session, the NSTF, based on a current risk assessment, indicated that the risk of unauthorized intrusion was higher than previously believed. At that meeting, the NSTAC charged the Industry Executive Subcommittee (IES) with direct oversight of all NSTAC network security efforts.

To address this responsibility, the IES created the Network Security Steering Committee (NSSC). The NSSC replaces the NSTF and serves as the focal point for all NSTAC network security initiatives. The IES also created the Network Security Standards Oversight Group (NSSOG), under the NSSC, to specifically address standards issues.

STATUS

The NSSC continues to serve as the NSTAC's focal point for network security efforts, overseeing and coordinating all NSTAC network security activities. The Government and industry NSIE's are continuing to work together in addressing network security threats to the PSN by meeting jointly every 2 months to share information regarding the full range of network security issues. The NSSOG continues collecting information on a variety of network standards activities ranging from intrusion detection to security management, and provides guidance to motivate the development and acceptance of industrywide standards.

Because network security is of paramount importance to the NS/EP telecommunications industry and to the success of the NII initiative, addressing the risks and threats from electronic intrusion should remain a high priority of industry and Government.

National Information Infrastructure

ISSUE

The NII is a seamless network consisting of a communications infrastructure, computers, data bases, and consumer electronics that will provide vast amounts of information to users regardless of location, profession, or information requirements. NS/EP requirements must be incorporated in the NII policies and applications to ensure that NS/EP users can respond to the entire spectrum of national emergencies. As the NII evolves, it is imperative that Government organizations developing the NII prototypes and industries developing NII services understand the importance of incorporating NS/EP requirements into the NII design.

BACKGROUND

President Clinton's interagency Information Infrastructure Task Force (IITF), chaired by Secretary of Commerce Ron Brown, was established in July 1993 by the Office of Science and Technology Policy and the National Economic Council. It is tasked to work with Congress and the private sector to reach consensus on and implement policy changes needed to accelerate the deployment of the NII. Its members include representatives from major Federal organizations. In addition, President Clinton signed an Executive Order in September 1993 creating the "United States Advisory Council on the National Information Infrastructure," which is charged with facilitating private sector input to the IITF.

The Clinton Administration's report, "The National Information Infrastructure: Agenda for Action," describes the goals of the NII and specifically tasks the NSTAC and the NCS with ensuring the information security and network reliability of the NII. The Administration requested that the NSTAC coordinate with and complement the effort of the Advisory Council regarding NII matters. The Administration also requested that the NCS continue its efforts with industry in reducing the vulnerability of the Nation's

telecommunication systems to accidents, sabotage, natural disasters, or military attack, and to coordinate resolutions of these vulnerabilities with the IITF.

To address NII NS/EP issues, and in advance of the Administration's request, the NSTAC IES established an NII task force (NIITF) in August 1993. The task force is charged with providing an interim report at the NSTAC XVI meeting scheduled for March 1994, and a final report, including recommendations to the President, at the NSTAC XVII meeting scheduled for January 1995. Potential NS/EP implications concerning the NII and recommended Government actions, including security, resiliency, interoperability, standards, frequency spectrum availability, and NII dual-use applications are to be addressed in the recommendations to the President.

Prior to the Administration's request, during a Committee of Principals (COP) offsite meeting in July 1993, the Principals approved a new Vision 21 Major Focus Area (MFA) VI, NII. MFA VI is responsible for ensuring that capabilities are in place to ensure that the NII supports the conduct of NS/EP activities of Federal, State, and local governments, and other supporting organizations. The intent is to work through existing interagency groups supporting the NII to ensure that the policies and technical recommendations for the NII include the necessary support for NS/EP activities.

STATUS

Over the next year, the Administration's IITF will be working together with interagency committees to identify telecommunications and information policies that need to be revised, written, or implemented to accelerate the rapid deployment of an advanced computer and communications infrastructure. The United States Advisory Council on the NII will continue to facilitate private sector input to the IITF.

The NSTAC NIITF is preparing an interim report to the President on key security considerations that need to be addressed in the evolving NII. In addition, the task force's subgroups on policy, applications, and architecture are identifying IITF activities with NS/EP implications and coordinating these implications with

the respective IITF committees. As the Administration develops draft NII policy recommendations (e.g., legislation, Executive Orders, agency directives), the NIITF policy subgroup will review and advise the United States Advisory Council on the NII regarding any NS/EP implications.

MFA VI is continuing to monitor and participate in the NII initiative. Currently, MFA VI is researching NS/EP applications, services, and features that should be included during development of the NII and will submit its recommendations to the IITF. MFA VI will brief the COP/Council of Representatives (COR) on a regular basis on the status of the NII to ensure education and awareness of COP/COR members on NII issues and developments.

The NSTAC and the NCS will continue to bring NS/EP issues to the attention of the IITF and its advisory bodies, help shape appropriate Government telecommunication and information policies that support NS/EP requirements, and ensure that NII policies and applications incorporate NS/EP requirements that ensure the reliability, security, and interoperability of the NII for both emergency and nonemergency uses. In addition, the NSTAC and the NCS, as part of the NII initiative, will continue to assess the evolving telecommunications infrastructure and advise the Government on plans and policies that enhance NS/EP requirements.

APPENDIX A

History of the NCS

The first telegraph and telephone were installed in the White House during the Hayes Administration (1877-1881). Over the years, telecommunications and the national telecommunications infrastructure have grown into a vital resource that is essential for the operation of Government functions and critical to the national security and emergency preparedness (NS/EP) needs of the Nation.

The essential role of telecommunications was especially highlighted during the Cuban Missile Crisis of October 1962 when President Kennedy experienced frustrating and potentially crucial delays in transmitting critical instructions to key Government organizations and in receiving prompt feedback. After the crisis was resolved, President Kennedy ordered a sweeping review of national security telecommunications in terms of capability, organizational structure, and needed improvements. As a result of this review, a Presidential Memorandum was issued on August 21, 1963, mandating that there be established a single, unified National Communications System (NCS) to be formed by "linking together, improving, and extending on an evolutionary basis, the communications facilities and components of the various Federal agencies . . . to provide necessary communications for the Federal Government under all conditions ranging from a normal situation to national emergencies and international crises, including nuclear attack."

The memorandum established an organizational structure for the NCS comprised of an Executive Agent (the Secretary of Defense was assigned this role), a Manager of the "System" (the Director of the Defense Communications Agency, now the Defense Information Systems Agency [DISA], was assigned this role), and a small office to provide staffing support to the Manager.

From its inception until April 1984, when Executive Order (E.O.) 12472, "Assignment of National Security and Emergency Preparedness Telecommunications Functions" was signed, NCS efforts were focused mainly on providing the plans, policy, and program focus for the NCS member organizations to develop improvements to the national telecommunications infrastructure. This was aimed at ensuring responsiveness and survivability of essential telecommunications during a crisis or emergency.

E.O. 12472 superseded the original charter, replacing it with an organizational and administrative structure designed to create an NS/EP telecommunications capability that provides evolutionary NS/EP telecommunication services to serve the President and the Federal Government under all circumstances. E.O. 12472 places procedural emphasis on consensus-building among member organizations and technical focus on interoperability and survivability involving a number of communication systems.

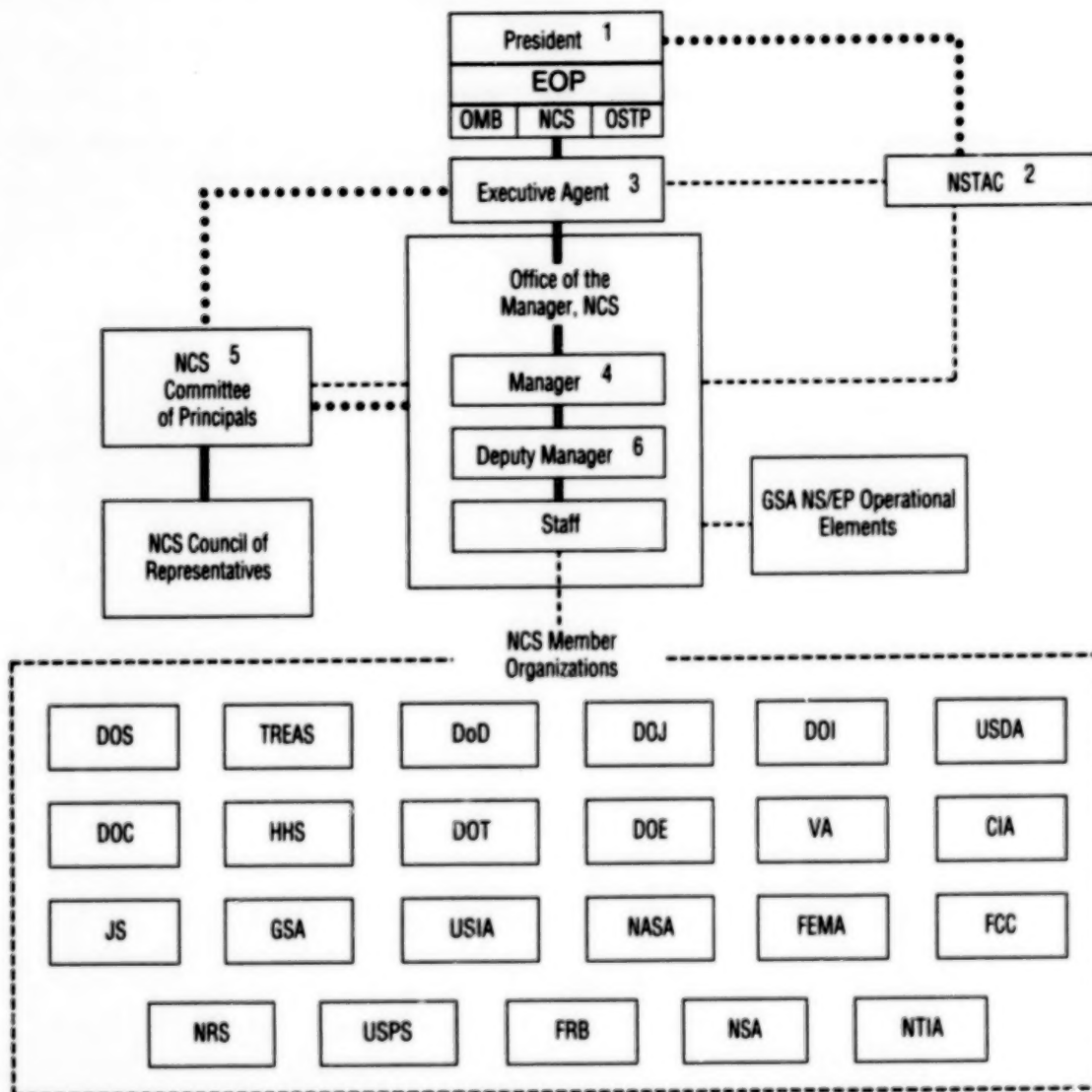
A more detailed 30-year history of the NCS is available upon request from the OMNCS in two documents entitled "National Communications System: Thirty Years of Progress," and "National Communications System: Emergency Communications for a Changing World."

NCS Administrative Structure

As established in E.O. 12472, the NCS administrative structure, as mentioned above, includes an Executive Agent; Committee of Principals (COP); and Manager. It serves as an interagency activity and focal point for joint industry-Government NS/EP telecommunications and planning (see Exhibit A-1 for an NCS organizational chart).

The role of the Executive Agent is to ensure that the NCS conducts unified planning operations to coordinate the development and maintenance of an

EXHIBIT A-1 NCS Organizational Chart



1. Policy Direction and Direct Execution War Powers Functions
2. National Security Telecommunications Advisory Committee
3. Executive Agent, NCS, responsibilities assigned to Secretary of Defense by E.O. 12472, April 3, 1984
4. Director, DISA, serves as Manager, NCS
5. The Key Telecommunications Officers of the NCS Member Organizations
6. First line management position which is exclusively NCS

LEGEND:

Coordination - - - - -
 Direction **—————**
 Advice ·········

effective and responsive capability for meeting the domestic and international NS/EP telecommunication needs of the Federal Government.

The Executive Agent designates the Manager of the NCS. The Executive Agent also ensures that the activities of the NCS are conducted in conjunction with the emergency activities of the Federal Emergency Management Agency. Specifically, the Executive Agent is responsible for recommending, in consultation with the COP, to the National Security Council, the Director of the Office of Science and Technology Policy, or the Director of the Office of Management and Budget, as appropriate, the following:

- ▼ Assigning implementation or other responsibilities to NCS member organizations
- ▼ Developing new initiatives
- ▼ Determining any changes in the composition or structure of the NCS
- ▼ Overseeing the activities of and providing personnel and administrative support to the Manager, NCS
- ▼ Providing staff support and technical assistance to the National Security Telecommunications Advisory Committee (NSTAC)
- ▼ Performing such other duties as are from time to time assigned by the President or his authorized designee.

The COP is composed of representatives from 23 Federal departments and agencies. As an inter-agency group, it serves as a forum for members to review, evaluate, and present views and recommendations on current or prospective NCS programs to the Manager, the Executive Agent, and the Executive Office of the President (EOP). A Council of Representatives was established by the COP as a permanent, subordinate subgroup to assist the COP in researching and developing complex NS/EP telecommunication issues.

The Manager, NCS, is tasked with the following:

- ▼ Developing a recommended evolutionary NS/EP telecommunications architecture
- ▼ Preparing program plans that identify NS/EP telecommunication requirements and enhancements that take advantage of new technologies and foster interoperability
- ▼ Recommending alternative mechanisms for funding programs
- ▼ Implementing and administering funded plans and programs.

In addition, the Manager chairs COP meetings, serves as the focal point for joint industry/Government planning, and manages the Federal Telecommunications Standards Program.

The Office of the Manager, NCS (OMNCS), is responsible for implementing and administering plans and programs, conducting technical studies, consulting with the COP and NSTAC, participating on Federal councils and boards concerning NS/EP telecommunications, and keeping abreast of international emergency telecommunications planning activities. The OMNCS staff resources are organized into four offices: Emergency Preparedness, Joint Secretariat, Plans and Programs, and Technology and Standards (see Exhibit A-2 for an OMNCS organizational chart).

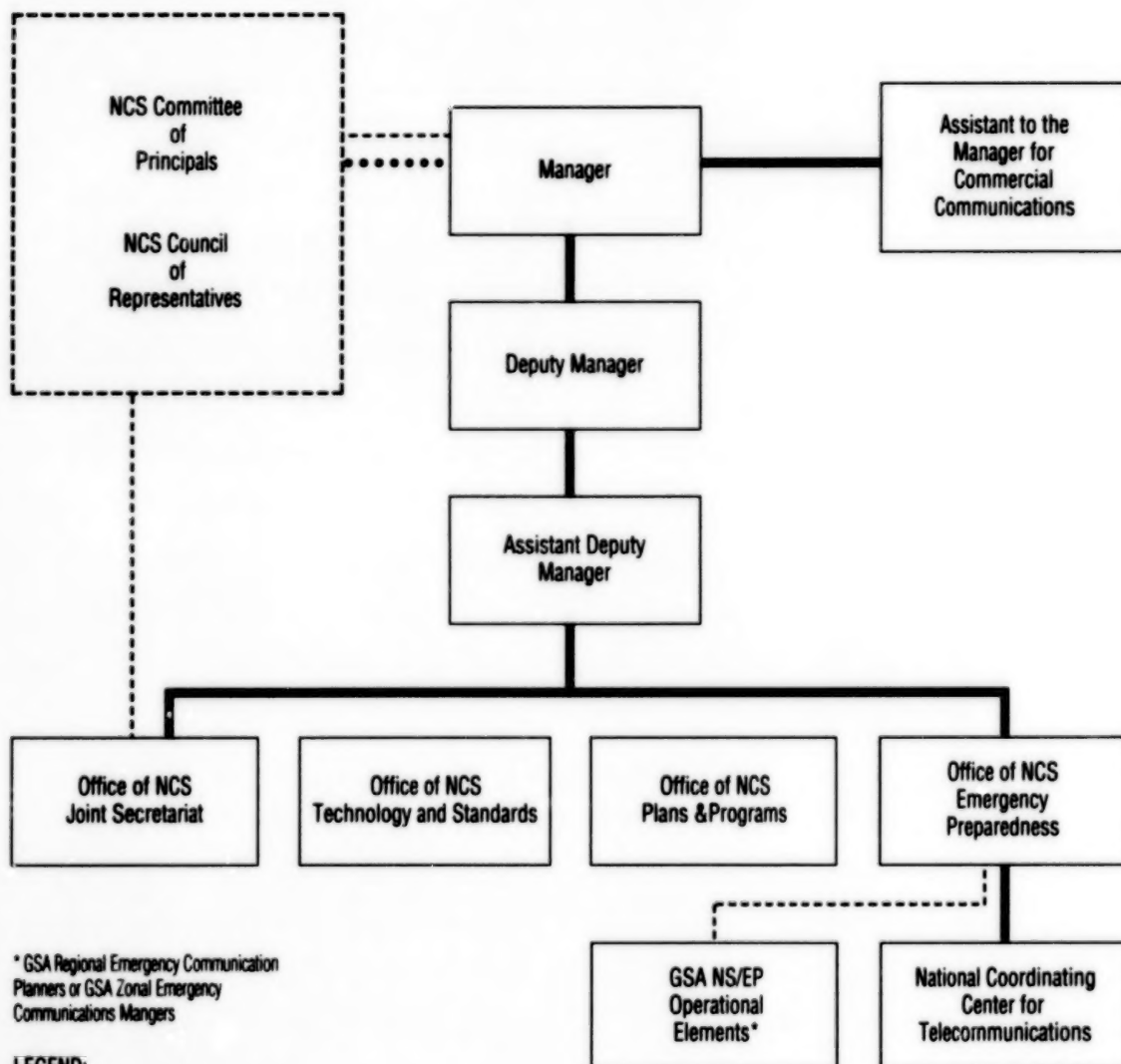
The President's NSTAC was established in September 1982 as a Presidential Advisory Committee. Its purpose is to provide advice and expertise to the President and the Executive Agent, NCS, on issues and problems related to implementing NS/EP telecommunications policy. The NSTAC's Industry Executive Subcommittee (IES), and the IES working groups, task forces, and other subordinate groups analyze NS/EP telecommunication issues and report the findings and recommendations through the NSTAC to the President. Because the NCS serves as the focal point for joint industry/Government planning, the NSTAC and NCS have developed a close partnership. Through this partnership, the National Coordinating Center for

Telecommunications (NCC), a major operational element in coordinating NS/EP telecommunication activities, was established in 1984.

As the NCS enters its fourth decade, the environment to which it must respond has changed dramatically from that faced by President Kennedy. As a

result, NCS programs and activities have evolved accordingly. The NCS agenda now places increased emphasis on preparedness and response to natural disasters, and involvement in the Nation's humanitarian assistance efforts.

EXHIBIT A-2 Office of the Manager, NCS



* GSA Regional Emergency Communication Planners or GSA Zonal Emergency Communications Managers

LEGEND:

Coordination -----
 Direction =====
 Advice

NCS-RELATED ACRONYMS

A

ACP	Allied Communication Publication
ACTS	Advanced Communications Technology Satellite
ADP	Automated Data Processing
AFB	Air Force Base
AFNET	Air Force Network
AIN	Advanced Intelligent Network
AIN PO	Advanced Intelligent Network Program Office
AIS	Automated Information Security
ALE	Automatic Link Establishment
AMBC	Advanced MBC
AMSC	American Mobile Satellite Corporation
AMT	ACTS Mobile Terminal
ANDVT	Advanced Narrowband Digital Voice Terminal
ANSI	American National Standards Institute
APCO	Associated Public-Safety Communications Officers
ARC	Ames Research Center
ARPA	Advanced Research Projects Agency
ARTCC	Air Route Traffic Control Center
ASCT	Auxiliary Satellite Control Terminal
ASD	Assistant Secretary of Defense
ASMB	Assistant Secretary for Management and Budget
ASP	Aggregated Services Procurement
AT&T	American Telephone & Telegraph
ATM	Asynchronous Transfer Mode
AUTODIN	Automatic Digital Network
AUTOVON	Automated Voice Network

B

B-ISDN	Broadband ISDN
BBS	Bulletin Board System
Bellcore	Bell Communications Research
BXA	Bureau of Export Administration

C

C-V	Capacitance-Voltage
C2	Command and Control
C3	Command, Control, and Communications
C3I	Command, Control, Communications, and Intelligence
C4	Command, Control, Communications, and Computers
CAP	Civil Air Patrol
	Competitive Access Providers
	Component Approval Process
CBEMA	Computer Business and Equipment Manufacturer Association
CCIR	International Radio Consultative Committee
CCITT	International Telegraph and Telephone Consultative Committee
CCPC	Civil Communications Planning Committee
CCPCWG	Civil Communications Planning Committee Working Group
CCS	Common Channel Signaling Communications Control Software
CCST	Contingency Communication Support Team
CD	Compact Disc
CDN	Consolidated Data Network
CFG	Communications Functional Groups
CI	Carrier Interconnect
CIA	Central Intelligence Agency
CINC	Commanders-in-Chief
CINCNET	Commander-in-Chief Network
CIPS	Civil International Preference Scheme
CJCS	Chairman, Joint Chiefs of Staff
CJCSI	CJCS Instruction
CMOS	Complementary Metal Oxide Semiconductor

CNS	Commercial Network Survivability	DMIP	DCS Mediterranean Improvement Program
COMMSTA	Communication Station	DMRD	Defense Management Report Decision
COMMSYS	Communication System	DMS	Defense Message System
COMSEC	Communications Security	DOC	Department of Commerce
CONUS	Continental United States	DoD	Department of Defense
COP	Committee of Principals	DOE	Department of Energy
COR	Council of Representatives	DOI	Department of the Interior
COW	Cell-On-Wheels	DOINET	DOI Network
CRISP	Communications Resources Information Sharing Program	DOJ	Department of Justice
CSI	Commercial SATCOM Interconnectivity	DOS	Department of State
CSS	Communications Control Software	DOT	Disk Operating System
CTIA	Cellular Telecommunications Industry Association	DOT	Department of Transportation
D		DSC	Digital Selective Calling
DAC	Disaster Assistance Center	DSCS	Defense Satellite Communications System
DACS	Digital Access and Cross-Connect System	DSCSOC	DSCS Operational Control Center
DAMA	Demand Assigned Multiple Access	DSIR	DCS Spain Italy Reconfiguration
DART	Disaster Assistance and Rescue Team	DSN	Defense Switched Network
DCS	Defense Communications System	DSP	Digital Signal Processing
DDM	Dual DS-3 Multiplexers	DTCS	DSCS Tactical Control Subsystem
DDN	Defense Data Network	DTS	Digital Telecommunications System
DEA	Drug Enforcement Administration		Dedicated Transmission Service
DEB	Digital European Backbone	E	
DECCO	Defense Commercial Communications Office	E-Mail	Electronic Mail
DECS	DSCS ECCM Control System	E-RTNR	Enhanced Real-Time Network Routing
DFCS	DSCS Frequency Division Multiple Access Control System	E.O.	Executive Order
DFO	Disaster Field Office	EA	Economic Affairs
DHHS	Department of Health and Human Services	EAN	Emergency Action Notification
DISA	Defense Information Systems Agency	EBS	Emergency Broadcast System
DISN	Defense Information System Network	ECC	Enhanced Call Completion
DISN-NT	Defense Information Systems Network Near Term	ECCM	Electronic Counter Counter-Measures Modem
DLA DCN	Defense Logistics Agency Communications Network	ECCRN	Emergency Command Control Radio Network
DMC	Distributed MILSATCOM Conferencing	ECS	Emergency Communications System
		ECSA	Exchange Carriers Standards Association
		EEF	Essential Emergency Functions
		EENET	Emergency Education Network
		EIA	Electronics Industry Association
		EICC	Emergency Information Coordination Center

EKMS	Electronic Key Management System	FRP	Federal Response Plan
EMP	Electromagnetic Pulse	FRWG	Funding and Regulatory Working Group
ENS	Emergency Notification System	FSN	FEMA Switched Network
EOC	Emergency Operations Center	FSTS	Federal Secure Telephone System
EOP	Executive Office of the President	FTS	Federal Telecommunications System
EP	Emergency Preparedness	FTSC	Federal Telecommunications Standards Committee
EPT	Exercise Planning Team	FTSP	Federal Telecommunications Standards Program
ESA	Economic and Statistics Administration	FWUF	Federal Wireless Users Forum
ESC	Enhanced Satellite Capability	FY	Fiscal Year
ESF	Emergency Support Function		
ESP	Electric Service Priority		
ESS	Enhanced Satellite Studies		
	Electronic Switching System		
ETN	Electronic Tandem Network	G	
EUCOM	European Command	G-T	Office of C3, USCG
		G-TTM	Telecommunications Operating Division
F		G-TTO	Telecommunications Management Division
FAA	Federal Aviation Administration	GEOLOCO	Geographical Location
FAATSAT	FAA Telecommunications Satellite	GETS	Government Emergency Telecommunications Service
FAMNET	Family Service Center Network	GMDSS	Global Maritime Distress and Safety System
FASTAR	Fast Automatic Restoration	GNSS	Government Network Security Subgroup
FBI	Federal Bureau of Investigation	GOSIP	Government Open Systems Interconnection Profile
FCC	Federal Communications Commission	GSA	General Services Administration
FCO	Federal Coordinating Official	GSFC	Goddard Space Flight Center
FECC	Federal Emergency Communications Coordinator	GTDI	GSA Telecommunications Development Institute
FED STD	Federal Standard		
FEMA	Federal Emergency Management Agency	H	
FESC	Federal Emergency Support Capability	HDTV	High Definition Television
FFMS	FEMA Frequency Management System	HEMP	High-Altitude Electromagnetic Pulse
FHWA	Federal Highway Administration	HF	High Frequency
FIPS	Federal Information Processing Standard	HPC	High Probability of Completion
FIRMR	Federal Information Resource Management Regulation	HQ	Headquarters
FM	Frequency Modulation	HT/MT	Heavy Terminal/Medium Terminal
FNAMS	FEMA National Automated Message System		
FNARS	FEMA National Radio System	I	
FOC	Full Operating Capability	IDCU	Integrated Data Communications Utility
FORSCOM	Forces Command	IDNX	Integrated Digital Network Exchange
FRB	Federal Reserve Board	IDS	Information Display System
FRC	Federal Regional Centers		

IEC	Interexchange Carrier
IEEE	Institute of Electrical and Electronic Engineers
	International Electrotechnical Commission
IES	Industry Executive Subcommittee
IFA	Interagency Funding Agreement
IITF	Information Infrastructure Task Force
IMA	Individual Mobilization Augmentee
IMO	International Maritime Organization
INFOSEC	Information Systems Security
INMARSAT	International Marine Satellite
INS	Immigration and Naturalization Service
IOC	Initial Operational Capability
IP	Internet Protocol
IRAC	Interdepartment Radio Advisory Committee
IRM	Information Resources Management
IRMS	Information Resources Management Service
ISDN	Integrated Services Digital Network
ISO	International Organization for Standardization
ITA	International Trade Administration
ITS	Institute for Telecommunication Sciences
ITT&C	Interoperable Telemetry, Tracking, and Control
ITU	International Telecommunication Union
ITW/AA	Integrated Tactical Warning/Attack Assessment

J	
J-6	Command, Control, Communications, and Computers Directorate
JCS	Joint Chiefs of Staff
JEIO	Joint Engineering and Interoperability Organization
JPDTP	Joint Pentagon DMS Transition Plan
JPL	Jet Propulsion Laboratory

JRSC	Jam Resistant Secure Communications
JS	Joint Staff
JTC	Joint Technical Committee
JTC1-TAG	Joint Technical Committee 1 Technical Advisory Group
JTRB	Joint Telecommunications Resources Board

K	
KDP1	Key Decisions Point One
KHz	Kilohertz

L	
LAN	Local Area Network
LANTCOM	Atlantic Command
LATA	Local Access and Transport Area
LC	Limited Capability
LEC	Local Exchange Carrier
LINCS	Leased Interfacility NAS Communications System
LMR	Land Mobile Radio
LOS	Line-of-Sight
LRPC	Long Range Planning Committee
LTA/EPA	Late Trans-Attack/Early Post Attack

M	
MAD	Message Address Directory
MAR	Mission Area Review
MARAD	U.S. Maritime Administration
MATTS	Mobile Air Transportation Telecommunications System
MBC	Meteor Burst Communications
Mbps	Megabits per Second
MCDN	Marine Corps Data Network
MERCOMMS	U.S. Navy/Merchant Marine Communications
MERS	Mobile Emergency Response Support
MF	Medium Frequency
MFA	Major Focus Area
MFJ	Modified Final Judgment
MHz	Megahertz
MILSATCOM	Military Satellite Communication
MOA	Memorandum of Agreement
MOP	Memorandum of Policy
MOSFET	Metal Oxide Semiconductor Field Effect Transistors
MOU	Memorandum of Understanding

MPD	Message Preparation Directory	NIST	National Institute for Standards and Technology
MRV	Multi-Radio Van	NKDS	Navy Key Distribution System
MSS	Mobile Satellite System	NLP	National Level NS/EP Telecommunications Program
MTSO	Mobile Telephone Switching Office	NMCC	National Management Communications Command
MTT	Mobile/Transportable Telecommunications	NMFS	National Marine Fisheries Program
N		NNOC	National Network Operations Center
NARACS	National Radio Communication System	NOAA	National Oceanic and Atmospheric Administration
NAS	National Airspace System	NOF	Network Operations Forum
NASA	National Aeronautics and Space Administration	NOS	National Oceanic Service
Nascom	NASA Operational Communications System	NPA	Numbering Plan Area
NATO	North Atlantic Treaty Organization	NPD	National Preparedness Directorate
NAVNET	Navy Network	NRC	National Research Council
NAWAS	National Warning System		Network Reliability Council
NCC	National Coordinating Center for Telecommunications		Nuclear Regulatory Commission
NCS	National Communications System	NRCOC	NRC Operations Center
NDDA	Natural Disaster Damage Assessment	NRSC	Network Reliability Steering Committee
NDER	National Defense Executive Reserve	NS/EP	National Security and Emergency Preparedness
NDMS	National Disaster Medical System	NSA	National Security Agency
NE	NCS Office of Emergency Preparedness	NSD	National Security Directive
NECC	National Emergency Coordinating Center	NSDD	National Security Decision Directive
NEMS	National Emergency Management System	NSF	National Science Foundation
NEMT	National Emergency Management Team	NSIE	Network Security Information Exchange
NENA	National Emergency Numbers Association	NSSC	Network Security Steering Committee
NESDIS	National Environmental Satellite Data and Information Service	NSSOG	Network Security Standards Oversight Group
NEST	Nuclear Emergency Search Team	NSTAC	National Security Telecommunications Advisory Committee
NETC	National Emergency Training Center	NSTF	Network Security Task Force
NII	National Information Infrastructure	NSTIS	National Security Telecommunications and Information System
NIITF	NII Task Force	NSTISSC	National Security Telecommunications and Information Systems Security Committee
NIS	New Independent States		
NISNET	Navy Investigative Service Network	NTCN	National Telecommunications Coordinating Network

NTIA	National Telecommunications and Information Administration	PEP	Primary Entry Point
NTMS	National Telecommunications Management Structure	PIC	Primary Interchange Carrier
NTSB	National Transportation Safety Board	PIN	Personal Identification Number
NTTC	National Transportable Telecommunications Capability	PLA	Plain Language Address
NWS	National Weather Service	PO	Program Office
O		POTS	Plain Old Telephone Service
O&O	Organization and Operations	Purchase of Telephone Services	Purchase of Telephone Services
OAR	Oceanic and Atmospheric Research	PPC	Policy and Procedures Committee
OC	Operating Centers	PROMIS	Procurement Management Information System
OCR	Optical Character Recognition	PSCN	Program Support Communications Network
OET	Office of Emergency Transportation	PSN	Public Switched Network
OIRM	Office of Information Resources Management	PTO	Patents and Trademark Office
OMB	Office of Management and Budget	PTT	Post, Telephone, and Telegraph
OMC	Operational Management Committee	R	
OMNCS	Office of the Manager, National Communications System	R&D	Research and Development
OPSEC	Operations Security	RBOC	Regional Bell Operating Companies
OSC	Office of Space Communications	RCOM	Recovery Communications Program
OSD	Office of the Secretary of Defense	RCS	Regional Computer System
OSI	Open Systems Interconnection	RETCO	Regional Emergency Transportation Coordinator
OSTP	Office of Science and Technology Policy	RFI	Request for Information
OTM	Office of Telecommunications Management	RFP	Request for Proposal
P		RI	Routing Indicator
PABX	Private Automatic Branch Exchange	RNHR	Robust Non-Hierarchical Routing
PBX	Private Branch Exchange	ROC	Regional Operations Center
PC	Personal Computers	ROMC	Required Operational Messaging Characteristics
PCC-NSTIS	Policy Coordinating Committee for National Security Telecommunications and Information Systems	RP	Republic of the Philippines
PCN	Personal Communication Networks	RRF	Ready Reserve Force
PCS	Personal Communications Services	RSPA	Research and Special Programs Administration
PCTN	Pacific Consolidated Telecommunications Network	RTNR	Real-Time Network Routing
		S	
		SATCOM	Satellite Communications
		SCIS	Survivable Communications Interpretation System
		SDIS	Switched Digital Integrated Service
		SHA	State Highway Agencies
		SHARES	Shared Resources
		SHF	Super High Frequency

SISOCs	Streamlining of Information Services Operations Consolidation Study	TMN	Telecommunications Management Network
SLC	Subscriber Loop Carrier	TMSO	Telecommunications Management and Services Office
SONET	Synchronous Optical Network	TOR	Terms of Reference
SORWG	Statement of Requirement Working Group	TPPS	Telecommunications Planning Process Subcommittee
SOW	Statement of Work	TQM	Total Quality Management
SS-4	Selective Signaling Voice Conferencing System	TREAS	Department of the Treasury
SS7	Signaling System 7	TSA	Technical Support Arrangement
SSB	Single Side Band	TSC	Technical Support Services
SSCN	Secure Survivable Communications Network	TSO	Telecommunications Service Orders
SSN	Survivable Signaling Network	TSP	Telecommunications Service Priority
STEP	Standard Tactical Entry Point System	TSR	Telecommunications Service Request
STU	Secure Telephone Unit	TSS	Telecommunications Service Staff
SVCS	Secure Voice Conferencing System		
T		U	
TA	Technology Administration	UHF	Ultra High Frequency
TAG	Technical Advisory Group	UPT	Universal Personal Telecommunications
TAMI	Traffic Analysis by Method of Iteration	USCG	United States Coast Guard
TCC	Transportable Communications Center	USCINCLANT	United States Atlantic Command
TCO	Telecommunications Certification Office	USCINCPAC	United States Pacific Command
TCS	Treasury Communications System	USDA	United States Department of Agriculture
TDRSS	Tracking and Data Relay Satellite System	USEUCOM	United States European Command
TEDSS	Telecommunications Emergency Decision Support System	USIA	United States Information Agency
TEMP	Test and Evaluation Master Plan	USMS	United States Marshals Service
TESP	Telecommunications Electric Service Priority	USPS	United States Postal Service
TIA	Telecommunications Industry Association	USTA	United States Telephone Association
TIB	Technical Information Bulletin	UWS	Universal Wiring Standard
TIM	Telecommunications Industry Mobilization		
TIS	Telemanagement Information System	V	
TISCOM	Telecommunications and Information Systems Command	VA	Department of Veteran Affairs
TMAO	Telecommunications Management and Operations	VANTS	VA Nationwide Teleconferencing System
		VHF	Very High Frequency
		VOA	Voice of America
		VTC	Video Teleconferencing
		W	
		WAN	Wide Area Network
		WHCA	White House Communications Agency

WITS	Washington Interagency Telecommunications System
WMCCS	World Military Command and Control System
WRSS	Wireless and Radio Support Service
WWOLS	Worldwide On-Line Systems

END

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